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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Public Chemical Appointments

FOR the second time within a comparatively short period, the Institute of Chemistry has recently found it necessary to protest against the terms offered by a public authority for a public chemical appointment. In the present instance, the post was that of public analyst, the standard required was that of a Fellow or Associate of the Institute of Chemistry who had passed the examination in the chemistry of food and drugs and water, and the terms were £250 per annum salary and a fee of 5s. for each sample of food and drugs. The public analyst was required to undertake the analysis of water for district councils and private persons at 15s. per sample. It was a further proviso that the person appointed should set up a laboratory. The Institute protested against these terms, it being suggested that the retaining fee should be raised at least to £400 plus 5s. per sample of food and drugs, and that the fee for water analysis should be £1 11s. 6d. In the report of the matter it is stated that the council of the Institute "feels that it is very necessary, on suitable occasions, to inform the local authorities as to the nature of the training and qualifications required for the practice of chemistry, in the hope that they may realise that the extent of the education and experience required for public appointments of this character are at least equivalent to those necessary for the practice of any other learned profession, and that a public analyst has the right to a prospect of earning an income comparable to that of any other professional officer of similar standing."

In spite of the fact that the protest in the present instance proved unavailing, the action of the Institute was not in vain. There is no doubt that in the matter of these appointments public authorities have a great deal to learn, and the Institute is doing very useful work in educating them.

The London Fuel Conference

THE Fuel Conference (World Power Conference) begins on Monday, September 24, at the Imperial Institute, London, and will continue in session until October 6. Owing to unexpected absence abroad, Lord Melchett is unable to be present, and his place as president will be taken by the Marquess of Reading, who will preside at the opening ceremony. The opening address will be delivered by Sir Robert Horne. The importance which is attached to the Conference in official circles is shown by the fact that on Tuesday, September 25, the delegates will attend a reception by the Government at Lancaster House, being received by Sir Philip Cunliffe-Lister, president of the Board of Trade.

The purpose of the World Power Conference is to consider how the industrial and scientific sources of power may be adjusted nationally and internationally, by considering the potential resources of each country in hydro-electric power, oil, and minerals; by comparing experiences in the development of scientific agriculture, irrigation, and transportation by land, air, and water; by conferences of civil, electrical, mechanical, gas, marine, and mining engineers, technical experts, and authorities on scientific and industrial research; by consultations of the consumers of power and the manufacturers of the instruments of production; by conferences on technical education to review the educational methods in different countries, and to consider means by which the existing facilities may be improved; by discussion on the financial and economic aspects of industry, nationally and internationally; by conferences on the possibility of establishing a permanent world bureau for the collection of data, the preparation of inventories of the world's resources, and the exchange of industrial and scientific information through appointed representatives in the various countries.

There are nearly 170 papers to be presented, from 48 participating countries, and in order to save time the organisers have very wisely circulated the papers and will take them as read. A general report on the papers will be read at the opening of each session, on

which subsequent discussion will be based. As far as chemists are concerned, main interest is concentrated on the following sections: Section B—Sampling and Testing of Solid Fuels, of which Professor J. W. Cobb is chairman and Dr. A. Parker vice-chairman; Section E—The Oil Industry—Economic and General Considerations, of which Sir Robert Waley Cohen is chairman and Mr. J. Kewley vice-chairman; Section F—The Composition, Classification, Preparation, Storage and General Handling of Liquid Fuels, of which Sir Thomas Holland is chairman and Dr. A. E. Dunstan vice-chairman; Section G—The Carbonisation Industry—Economic and General Considerations, of which Sir David Milne-Watson is chairman and Mr. R. Ray vice-chairman; Section Q—Low-Temperature Carbonisation, of which M. Guillaume (French Inspector-General of Mines) is chairman and Dr. F. S. Sinnatt vice-chairman; Section S—Power Alcohol, of which Dr. F. S. Sinnatt is chairman and Sir Frederic L. Nathan vice-chairman; and Section T—Training of Fuel Technicians, of which Sir Robert Hadfield is chairman and Professor J. W. Hinchley vice-chairman.

Apart from the scientific and technical proceedings, there will be an official banquet on Monday, September 24; visits to the Port of London and to the Rothamsted Experimental Station on Thursday, September 27; visits to the Gas Light and Coke Co. and the London Electric Supply Co., Ltd., on Tuesday, October 2; and visits to the Fuel Research Station, the National Physical Laboratory, and the laboratories of the Anglo-Persian Oil Co. on Thursday, October 4.

Patents for U.S. Government Employees

UNTIL recently, the rights of Government employees in the United States with regard to patents seem to have been rather vague. Patents taken out in their names could be freely used by the Government, but the rights of the inventor (owing apparently to the bad drafting of an old Act) in the case of other use were very uncertain. Some U.S. Government bureaux required that all such patents should be dedicated to the public; in others, there was encouragement for individuals to acquire patents, which were then pooled by the workers of one laboratory. It seems to have been generally felt that the old method of dedicating a patent to the public placed the patent in a position comparable to one that had expired, in that the dedication destroyed the very monopoly which a patent grants. The vagueness of the old procedure is shown by the fact that infringement suits for a total of $600,000,000 are pending in the U.S. Court of Claims.

Under a new Act passed by Congress a short time ago, the invention patented may be used by the U.S. Government without payment of royalty. Those applying for patents may be relieved from the payment of fees and may enjoy certain other privileges if the head of the department certifies that the invention in question may be of use in the public interest. The patentee will own the patent whether he pays the fee or not. Presumably, anybody other than the Government making use of the patent would have to pay a royalty, or at least enter into some agreement with the patentee.

Natural and Synthetic Fertilisers

THE speech made by Sir Arthur Goldfinch at the banquet in celebration of the anniversary of Chilean independence puts the attitude of the natural nitrate industry very forcefully. There is nothing vague in the statement that "it is a sin against economics to build new factories for synthetic nitrogen on a scale which disregards the productive powers of nitrate oficinas in Chile already built and capable of supplying with peculiar efficiency their own special share of the world's needs." The Chilean nitrate industry claims, according to Sir Arthur Goldfinch, that it has a right, assigned by nature, to one-quarter to one-third of the world's market. It will be interesting to see the effect of this stiffened attitude on the part of the Chilean producers. It has been hinted latterly that in addition to the recent reorganisation of the marketing of nitrate, the Chilean Government is considering the modernisation of methods of production. This would seem to point to an increased production of nitrate. The production of synthetic nitrogen compounds is also increasing, by leaps and bounds. It seems that competition is to grow fiercer and fiercer.

Books Received

ORGANIC CHEMISTRY. By James Bryant Conant. London and New York: Macmillan and Co., Ltd. Pp. 291. 10s. 6d.

SYMBOLS AND FORMULAE IN CHEMISTRY. By Dr. R. M. Caven and Dr. J. A. Cranston. London and Glasgow: Blackie and Co., Ltd. Pp. 220. 15s.

LEHRBUCH DER CHEMIE. Band I—Allgemeine Chemie, by Professor Johann Matula. Anorganische Chemie, by Professor Carl Oppenheimer. Pp. 566. 26 marks. Band II—Organische Chemie, by Professor Carl Oppenheimer. Pp. 470. 22 marks. Leipzig: Georg Thieme.

INORGANIC CHEMISTRY. Vol. I, NON-METALS. By G. H. Bailey and D. R. Snellgrove. London: University Tutorial Press, Ltd. Pp. 488. 6s. 6d.

EVERY INVENTOR HIS OWN PATENT AGENT.—By W. H. Baraclough. London: Effingham Wilson. Pp. 418. 20s.

The Calendar

Sep. 24–Oct. 6	World Power Conference. Fuel Conference.	Imperial Institute, London.
Oct. 1	Sir John Cass Technical Institute. Inaugural Ceremony Session 1928–29. Address by Sir William E. Goodenough. 8.15 p.m.	Jewry Street, Aldgate, London.
1	Society of Chemical Industry. Chemical Engineering Group. Joint meeting with the London Section: "Road-Surfacing Materials." W. J. A. Butterfield.	London.
1–13	Daily Dispatch Second Artificial Silk Exhibition.	City Hall, Deansgate, Manchester.
3	Society of Public Analysts: Papers by G. W. Monier-Williams, T. McLachlan, W. R. Schoeller and E. F. Waterhouse. 8 p.m.	Burlington House, Piccadilly, London.
5	Society of Chemical Industry. Chemical Engineering Group. Joint meeting with the London Section. "Factory Floors." F. H. Rogers.	London.
9	Institution of Petroleum Technologists. 5.30 p.m.	John Street, Adelphi, London.
10 & 11	Ceramic Society: Building Materials Section. "Modern Facing Bricks," A. B. Searle. "Thermal Insulation," Colin Presswood. "Modern Brick Machinery and Works Lay-out." The Pragos Engineering Co.	Stoke-on-Trent.

With the Chemists and Chemical Engineers Abroad—(V)

By Our Special Correspondent

The party of chemists and chemical engineers which has been visiting Canada and the United States spent the week commencing September 3 in New York, where the annual meeting of the Society of Chemical Industry was held. Our special correspondent's account of the week's events appears below. Previous articles appeared on August 18, September 1, September 8 and September 15.

New York, Saturday, September 8.

THE memorable week in New York is over, and this morning sees the break-up of a party that has lived very happily together for three weeks under circumstances of great variety. The majority are leaving this morning for the return passage on the *Celtic*; a few remain, some to proceed to Swampscott for the annual meetings of the American Chemical Society, others to make further investigations and pay personal calls. This morning I learn that the I.C.I. delegates were invited to revisit Canada for the purpose of seeing more of Canadian industries. Permission by cable has been received from headquarters for some eight or ten to remain in response to this invitation.

Glad as everyone will be of a rest, for it has been a very strenuous tour, all are sorry that at last the companionship is coming to an end. The New York people seem equally sorry. Pathetic farewells are going on all around one, together with earnest hopes of personal reunion either here or in England. The British party has created a very good impression—from the stately figureheads to the lively young people. In the Chemists' Club this morning I heard a seasoned clubman remarking: "A very nice bunch of people; we all hope they've enjoyed themselves and will come again." When we arrived a week ago it seemed impossible to look for anything so good as our past experiences. But the New York people have been kindness itself, and their hospitable arms have made a very pleasant resting place. One advantage is that we have stayed long enough to get to know them. At other points we have just had time to make friends and rush off. Here we have remained long enough to know and to get known, and every day has made us feel more at home among our kindly and enthusiastic hosts, whose only concern has been how to make our visit pleasant and profitable.

The only serious business of the week has consisted of the annual meeting of the Society of Chemical Industry, the Messel Lecture by Dr. Millikin on Tuesday, and the technical sessions on Thursday. These were taken in not too serious a spirit, though they were by no means neglected.

Mr. Carr, of course, presided over the annual meeting of the Society, and in the absence of Dr. Longstaff, Dr. Colgate acted as temporary secretary. The copies of the annual reports had been held up in the post and were not available for distribution. For the most part the report was a matter-of-fact record of the already familiar events of the past year. The section dealing with membership is however of interest, as showing a continued, if slight, decline in numbers, in spite of energetic efforts to check the movement. During the year the membership declined from 4,709 to 4,648. It is small, it is true, but taking the past five years the decline is from 4,830 in 1924 to 4,648 in 1928. The report recognises the importance of this point, as the following paragraph shows:—

Much effort has been put out during the year, both by the head office and the local sections, with the object of increasing the membership, but although the number of members elected during the year is greater than that for the previous year, there has been unfortunately an increase in the losses due to resignation and other causes. Having regard to the number of chemists at home and abroad, the council is strongly of opinion that the Society should be able to attract into its membership a much larger number of new members, especially among the younger chemists. To this end it has for several years suspended the entrance fee, and in the case of an applicant under the age of 25 the subscription has been reduced to £2 for the period of three years, or until he attains the age mentioned. It should also be pointed out that, in the case of members joining during the last three months of the year and paying their subscriptions for the following year, they are at liberty to attend the meetings of their local sections during the remainder of the year in which they are elected. The council will be grateful to members of the Society if they will do all they can to introduce new members, or if they will send to the General Secretary the names and addresses of persons who they think ought to join the Society.

The balance sheet was regarded as satisfactory in the sense that the balance in hand on the year is £821 as compared with £540 in the previous year. This result, however, is due not to increase of revenue, both the revenue from advertisements and from membership showing a decline, but to economies in the publication department.

There was very little discussion on the report. Mr. Carr moved that the annual report be adopted as read, and Professor Thorpe seconded. The latter congratulated the council on the progress made in the past year, and particularly emphasised the importance of continued co-operation between the Society of Chemical Industry and the Chemical Society, especially in the publication of abstracts.

It fell to Dr. Cullen, usually, as he remarked, the leader of the opposition, to propose the adoption of the accounts. The publication expenses showed a reduction of nearly £2,000, and upon that decrease the success of the Society had mainly depended during the past 12 months. There was a reduction of something like £300 in subscription fees. This was regrettable, and although the amount was not very great they would have much preferred to see an increase. He looked upon this visit, however, as probably marking the turning point so far as membership was concerned.

Turning for a moment to the visit itself, Dr. Cullen claimed the right to say a word or two on behalf of the rank and file of the party. So far the speeches had been limited to the high officials of the party, who had been heard repeatedly—this, in fact, had been a frequent matter of comment—and he desired to say, on behalf of the rank and file, how much they all felt the kindness and hospitality received at every stage of the tour. (Applause.) Such visits, he hoped, would be continued, and it was their wish that in a year or two they might have an opportunity of overwhelming an American party with kindnesses, as they had themselves been overwhelmed.

"There is," said Dr. Cullen, "one matter for regret, which has caused considerable comment: that is the announcements in the press at various points, in which no mention has been made of the chemical engineers, and the tour has been represented as a tour of the Society of Chemical Industry. I do not know who is responsible for the issue of those reports, but I deplore those inaccurate press notices, which have given quite a false impression of

the character of the party. It is due to our hosts to say that the tour from Quebec to Washington, a truly remarkable and memorable fortnight, was organised solely by the American Institute of Chemical Engineers, and not by any other body. We wish to make that simple fact known, and to acknowledge once more our deep and lasting indebtedness to our chemical engineering friends for one of the most delightful tours ever organised." (Applause.)

The motion was seconded by Sir Alexander Gibb, and adopted.

The President reported that a cordial invitation had been received to hold the next annual meeting in Manchester, probably during the first three weeks in July. On his motion, seconded by Mr. Choate, the invitation was unanimously accepted.

Mr. Carr then delivered his presidential address, taking as his subject "Research and Chemical Industry." Towards the close, Mr. Carr especially emphasised the need of technical and scientific men being represented in the management of chemical concerns, and in reference to modern large amalgamations emphasised also that the object must be not the acquisition of personal wealth, but the production of riches for mankind generally.

A vote of thanks was proposed by Dr. Little, Mr. Carr's successor in the chair of the Society, who paid a warm compliment to Mr. Carr—to the prodigality with which he had expended time and energy for the Society during his two years of office, and to his chemical scholarship, broad culture, and personal qualities. Mr. Carr, in reply, assured Dr. Little of the warmest welcome and support during his term of office.

There was a crowded attendance at the Messel Lecture in the evening, by Dr. Millikan, on "Available Energy." The Medal was presented, with a few appropriate remarks, by Mr. Carr. Dr. Millikan briefly thanked the Society, and then, passing to his desk, entered at once upon his lecture. One recognised him as a first-rate thinker and philosopher, with a clear and fearless vision and a gift of exposition. His lecture will be remembered as one of the great occasions of the visit.

During the week there were several delightful excursions, including two river trips; while a special programme was arranged for the lady members of the party. The annual banquet at the Hotel Commodore was unanimously voted the most brilliant gathering of the tour. Much of this was due to the humorous lead given by Professor Bogart. The speaking by Mr. Strassburger (representing the Mayor of New York), Mr. Carr, Professor Thorpe and Dr. Little was all good, and the evening was a brilliant success.

F. E. H.

The Nitrate Policy of the Chilean Government

Important Speeches at Independence Celebration Dinner

At a dinner given on Tuesday by the Chilean Minister to celebrate Chilean Independence, important statements regarding the nitrate industry were made by the Minister (His Excellency Don Antonio Huneeus), Sir Arthur Goldfinch, and Lord Hunsdon (of the Alianza Co.)

THE Chilean Minister said that the reorganisation of nitrate sales just agreed upon by his Government and the producers and dealers received its solemn consecration through the attendance at that celebration of their national day of the principal nitrate merchants and of all those Englishmen who had worked in Chile. Nature's special privilege, great gift of hers, made doubly precious through the nobility of its uses and through its inestimable value, nitrate, their fertiliser, which populated the desert, appraised the fruits of the fields, encouraged the factories, vivified the manufactures, nourished great masses of their people, supplied a large part of the fiscal revenue, and engendered in the soul of their country that virile fortitude, that healthy contentment which arose from the well-being attained as a result of personal and honest endeavour.

Nitrate History

The history of the nitrate industry had not been that of the legendary easy-money. The struggle had been a titanic one, in which Chileans, Englishmen, Yugoslavs, Germans and North Americans had been engaged "for better or for worse" for over half a century. His Government, acting under the highest inspiration, had adopted a policy—the policy which they all knew—and which had to-day the approval of everyone. Freight charges and bag duties were reduced. Two specialised organisations had been created, the Direccion and the Caja Salitreras, which had been the means of financing the industry, supplying new markets, organising the trade and the distribution of the fertiliser all over the world, and subsidising output, a programme which was being efficiently carried out. His Government had, finally, as they were aware, upheld the selling organisation, and through this the price of nitrate had been stabilised and made as low and uniform as possible for all consumers. To secure such vital ideals the Government had brought the producers together and put them into closer contact with the consumers, had simplified the intermediation, and assumed courageously the burden which might be necessary in order to support the policy of cheap prices.

His Government and the nitrate producers stood firmly and faithfully by this new policy. Consumers were satisfied as to the superiority of their fertiliser. Sales had increased, prices were reasonable. New processes for the further reduction of cost were being tried. They had conquered the main difficulties of the industry. Signs of astonishing possibilities were now visible which might be realised in the near future by iodine, the by-product of nitrate.

Chilean President's Statement

The Chilean Minister then read a message from the President of the Republic of Chile, who said that his Government, being firmly convinced that a duty of solidarity linked the peoples of the world together, would omit no sacrifices by means of which Chile could supply humanity, in the best possible conditions, with the vital elements which she had at her disposal and which were indispensable to them. The fruit of the efforts she had already made in this direction could be seen in the notable reduction in the prices of nitrate and the considerably increased export of that commodity. That proved how effectively and unflinchingly she had acted up to her convictions, and allowed the hope for a future of enormous possibilities. From day to day it became more and more evident that it was necessary to supply their nitrate to the lands which centuries of cultivation had exhausted, and to spare no effort to help the industry effectively, in order to enable it duly to supply the world's growing demand. In that campaign they counted on the efforts of the men who were themselves in the industry, on the distinguished co-operation of the financial and commercial agencies who were represented at that gathering, on the confidence of capital which lent such weighty assistance to the development of their industries, especially their nitrate industry, on the activity of the propaganda department of the Producers' Association, and on the support and loyal friendship of the British Government and of the Governments of the friendly nations.

Sir Arthur Goldfinch's Speech

Sir Arthur Goldfinch, in opening his speech, referred to the many distinguished guests who were present, mentioning among others Lord Inverforth, Mr. Alexander, representing the distributors of nitrate in the United States, and Mr

Miwa, of the firm of Mitsui and Co., who had undertaken distribution in Japan.

Chile, he said, sufficed for herself in all the liberal fruits of mother earth in the widespread and beautiful farm lands of her central and southern provinces. She was developing varied and efficient manufacturing industries. But her great export business, the place which she was proud to hold in all the markets of the earth, must chiefly depend upon nitrate and copper. Nitrate, because it was so unique, so characteristic, so precious and wonderful a product, must always be the great contribution which Chile made to the economic welfare of mankind. The Chilean nation had always believed that this was so, and now a strong and stable Chilean Government affirmed its intention by every means in its power to support and protect nitrate producers in their determination to make good their present position in all the world's markets, and to secure for Chile a large share in the yearly increase in the demand for nitrogen which the imperative needs of agriculture made certain.

Erroneous Views of the Synthetic Producers

He applauded Lord Melchett's untiring energy in widely varying fields of human activity. They recognised that his works at Billingham were a triumph of skill and science. They admired the filial piety with which he looked back to the days when Dr. Ludwig Mond and Sir William Crookes were almost alone in predicting the fixation of nitrogen from the air. They thought, however, that they were entitled to say that it would not only be becoming, but that it would also be commercially wise for the great leaders of the synthetic industry to recognise in public and in their private councils that the Chilean nitrate industry, besides being the pioneer and the creator of the great business of converting nitrogen into food, had an output greater than that of any other group. Strange mistakes had been made in these matters. When Sir William Crookes, under the inspiration, as they were now told, of Dr. Ludwig Mond, made his sensational declaration at Bristol in 1898, he dolefully predicted that extinction of the Chilean nitrate deposits in the course of twenty-five years. They all hoped that two hundred years hence there would be a Baron Melchett looking back with pride to the scientific prescience of his great ancestor, Dr. Ludwig Mond, but they might safely prophesy that the Chilean deserts would then still be supplying vast quantities of nitrate to prove the falsity of the prophecies of exhaustion.

Owing to the courtesy of the Stickstoff-Syndikat they had the printed text of the papers read during the Nitrogen Conference on board the *Lützow*, in the Adriatic. Their friend, Mr. Speyer, of Nitram, Ltd., in his extremely instructive and able lecture, gave a forecast of nitrogen figures, which put the production of synthetic nitrogen at 925,000 tons for 1927–28, to increase by 600,000 tons in the next three years. The production of Chilean nitrate for 1927–28 he put at 335,000 tons, and gave the same unvarying figure for the next three years. He supposed that they ought to thank Mr. Speyer for not predicting, as he might have done just as easily, that their production was gradually to dwindle, until complete extinction came clearly in sight, but the fact was that his figures for 1927–28 had already been exceeded when he delivered his lecture, and his predictions for the next three years bore no relation whatever to existing facts and probabilities. The production for the existing nitrate year would be more than 50 per cent. in excess of the figures given by Mr. Speyer, and he might rest content that their share of the total trade in 1930–31, instead of the 14 per cent. he assigned to them, would exceed 25 per cent.

The Share Demanded by Chilean Nitrate

They cheerfully admitted the vast and growing importance of the synthetic nitrate industry. The widespread and ever-growing need for mineral nitrogen in agriculture, which they were the first to discern and the first to satisfy, had long since reached a scale which called for the efforts of more than one country effectively to deal with. They recognised also that for purposes of military defence and for other reasons many countries had very naturally determined to supply a part of their respective requirements by home production. All this they quite cheerfully accepted as part of the natural order of things, but they claimed that in every country in the world, with no exception whatever, the interests of farmers coincided with the interest of Chile in demanding that a large share of the nitrogen needed by the soil should be applied in the form of Chilean nitrate.

That was not the time nor the place to dwell in any technical detail upon those attributes of Chilean nitrate which made it for many soils and many crops almost irreplaceable, but in the secret recesses of their hearts their rivals, or at least all their intelligent and well-instructed rivals, were as convinced of the superior merits of Chilean nitrate as he was. It seemed to be clearly indicated by the whole body of existing facts that the interests of all concerned would be best consulted by leaving to be supplied by Chilean nitrate that substantial share of the needs of agriculture which their fertiliser was above all its rivals peculiarly fitted to meet. The newcomers in the business, if they viewed the problem in its right proportions, would, he was sure, recognise that one-quarter to one-third of the market was assigned to Chile by the facts of Nature, and that the remainder was more than enough to satisfy the legitimate ambitions of the producers of by-product and synthetic nitrogen. He wished to affirm with the utmost emphasis and deliberation that in their judgment it was a sin against economics to build new factories for synthetic nitrogen on a scale which disregarded the productive powers of nitrate oficinas in Chile already built and capable of supplying with peculiar efficiency their own special share of the world's needs.

The Importance of Iodine

Their industry supplied the world with another product, if possible more wonderful than nitrate. He referred to iodine. That element had for more than a generation been recognised as indispensable in modern medicine, but of late years a vast field of unexplored knowledge opened out before them with regard to the part which such elements as iodine, even in extremely minute quantities, played in the phenomena of life. The investigations proceeding at the Rowett Institute, at Weihenstephan in Saxony, and at several other scientific centres abundantly proved that iodine was an indispensable element in stall-feeding and other forms of animal nutrition, and had a profound effect on the health of animals, their fecundity, the quality of meat and milk and other such factors of enormous importance to the stock-breeder and diaryman. Immunity from epidemics like foot and mouth disease and the cure of the diseases themselves were well within the possibilities of iodine. Conservative though the Ministry of Agriculture might be, they would allow themselves to hope that it might consider the possibility of abandoning its slaughtering policy and substituting the intravenous injections of iodine so successful in India. In the sphere of human life and health the functions of iodine were of equally vital importance.

Lord Hunsdon's Views

Lord Hunsdon said that it was very gratifying that every effort would be made, so far as it lay in the power of Chile, to increase the production and consumption of nitrate; and to protect the industry by making whatever sacrifices the Government might deem justified if there should appear to be any likelihood that the competition of other fertilisers should check their national production; and it was evident that the nitrate producer, whose industry nourished great masses of the Chilean people, would have the Government at his back in his competition with all other producers of nitrogen.

The Chilean Government had promised substantial assistance to the producers, which, indeed, would be necessary if Chilean nitrate was to be sold at moderate prices and production substantially increased. The arrangements which the Chilean Government had made for the distribution of nitrate were on the right lines; and if loyally and energetically carried out by all concerned they would not only result in Chilean nitrate holding its own in the world's consumption of nitrogen, but would ensure for nitrate that increase in consumption to which it was justly entitled as the world's best fertiliser. The arrangements made for distribution would naturally, to some extent, be of an experimental nature during the present season; but while he believed them to be sound in principle, experience might show that modifications were required on certain points.

The London Fuel Conference

Time-Table of Technical Meetings and Social Functions

On Monday next, September 24, the Fuel Conference (World Power Conference) opens at the Imperial Institute, South Kensington, London. It will continue until October 6. In the absence of Lord Melchett, who has gone abroad on important business, the Marquess of Reading will act as President of the Conference. The social functions connected with the Conference include a banquet on Monday, September 24; a reception by the President of the Board of Trade on Tuesday, September 25; and a reception by Dr. Robert Mond on Friday, September 28.

THE countries participating in the London Fuel Conference (World Power Conference) number forty-eight. In the following time-table, the morning sessions extend from 10.15 a.m. to 12.45 p.m.; and the afternoon sessions from 2.30 to 5 p.m.

Monday, September 24, 3 p.m.: Official opening of Conference in the Great Hall of the Imperial Institute.—7 for 7.30 p.m.: official banquet, at the Connaught Rooms, Great Queen Street, W.C.2.

Tuesday, September 25, morning: Section A, "The Coal Industry, Economic and General Considerations." Chairman, Lord Aberconway; vice-chairman, Mr. W. Thorneycroft; general reporter, Mr J. Roberts. The papers include "The Constitution of Coal," by Professor R. V. Wheeler. Section E, "The Oil Industry—Economic and General Considerations." Chairman, Sir Robert Waley Cohen; vice-chairman and general reporter, Mr. J. Kewley.—Section N, "Internal Combustion Engines." Chairman, Sir Robert Waley Cohen; vice-chairman, Mr. J. Kewley; general reporters, Mr. J. Kewley, Mr. H. R. Ricardo and Mr. O. Thornycroft.

Tuesday, September 25, afternoon: Section B, "Sampling and Testing of Solid Fuels." Chairman, Professor J. W. Cobb, vice-chairman and general reporter, Dr. A. Parker.—Section F, "Composition, Classification, Preparation, Storage and Handling of Liquid Fuels." Chairman, Sir Thomas Holland; vice-chairman and general reporter, Dr. A. E. Dunstan.

Tuesday, September 25, evening, 9.15 for 9.30 p.m.: Reception by His Britannic Majesty's Government, Lancaster House, S.W.1; Sir Philip Cunliffe-Lister, president of the Board of Trade, and Lady Cunliffe-Lister will receive the guests.

Wednesday, September 26, morning: Section C, "Coal Treatment." Chairman, Professor R. V. Wheeler; vice-chairman, Dr. R. Lessing; general reporter, Dr. W. R. Chapman.—Section D, "Storage and Handling of Solid Fuels by the User." Chairman, Professor R. V. Wheeler; vice-chairman, Dr. R. Lessing; general reporter, Dr. W. R. Chapman.—Section R, "Peat." Chairman, Dr. C. H. Lander; vice-chairman, Sir Frederic L. Nathan; general reporter, Mr. T. C. Finlayson. The papers include, "The Drying of Peat," by N. Testrup and T. Gram (Great Britain).—Section S, "Power Alcohol." Chairman, Dr. F. S. Sinnatt; vice-chairman, Sir Frederic L. Nathan. A paper on "Alcohol for Power Purposes" will be contributed by the vice-chairman.

Wednesday, September 26, afternoon: Section G, "The Carbonisation Industry—Economic and General Considerations." Chairman, Sir David Milne-Watson; vice-chairman, Mr. R. Ray; general reporter, Mr. F. S. Townend. The papers include the following by British authors: "The By-Product Coke-Oven as a Source of Industrial and Domestic Energy"; "The Fundamental Aspects of Combustion," by Professor W. A. Bone, Professor G. I. Finch and Dr. D. T. A. Townend; "The Utilisation of Coke Oven Gas by the Gas Industry," by T. P. Ripley."

Thursday, September 27, morning: Section H, "Composition, Classification, Preparation, Storage and Handling of Gaseous Fuels and of the Products of the Carbonisation Industry." Chairman, Mr. J. Terrace; vice-chairman, Mr. E. V. Evans; general reporter, Mr. T. C. Finlayson. The papers include the following by British authors: "The Fundamentals of Coal Blending and the Production of Solid Smokeless Domestic Fuel," by Dr. J. G. King; "Gas Manufacture," by Professor J. W. Cobb; "The Purification of Coal Gas," by C. Cooper; "Some Technical and Economic Aspects of the By-Product Ammonia Recovery Problem," by P. Parrish.

Thursday, September 27, afternoon: Official visits to the Port of London and the Rothamsted Experimental Station.

Friday, September 28, morning: Section J, "Utilisation of Fuels for Steam Generation and the Production of Electricity." Chairman, Sir Charles Parsons; vice-chairman, Mr. R. P. Sloan; general reporter, Mr. G. Stoney.

Friday, September 28, afternoon: Section K, "Utilisation of Fuels, including Electricity, for Industrial Furnace Work." Chairman, G. K. Orrok; vice-chairman and general reporter, Mr. R. T. Smith

Friday, September 28, evening, 9.15 for 9.30 p.m.: Reception by Dr. Robert Mond, Hotel Cecil.

Monday, October 1, morning: Section L, "Utilisation of Fuels, including Electricity, for Domestic Purposes." Chairman, Sir Richard Threlfall; vice-chairman and general reporter, Dr. Margaret Fishenden.

Monday, October 1, afternoon: Section M, "Pulverised Fuel." Chairman, Mr. A. Page; vice-chairman, Mr. H. A. Humphrey; general reporter, Mr. A. Grounds.

Tuesday, October 2, morning: Section Q, "Low-Temperature Carbonisation." Chairman, M. Guillaume; vice-chairman, Dr. F. S. Sinnatt; general reporter, Mr. F. S. Townend. The papers to be read are: "Possibilities of Co-ordination between Coal Processing and the Production of Electricity, by Dr. Ing. P. Rosin (Germany); "Low Temperature Carbonisation," by Drs. C. H. Lander and F. S. Sinnatt; and "The Present State of Low-Temperature Carbonisation in Germany," by Dr. R. Heinze.

Tuesday, October 2, afternoon: Official visits to Gas Light and Coke Co., and London Electric Supply Co., Ltd.

Wednesday, October 3, morning: Section O, "Transmission of Power." Chairman, Dr. C. Köttgen; vice-chairman, Mr. E. C. Evans; general reporter, Mr. F. S. Townend.—Section P, "Waste Heat Recovery." Officials as in Section O.

Wednesday, October 3, afternoon: Section T, "Training of Fuel Technicians." Chairman, Sir Robert Hadfield; vice-chairman, Professor J. W. Hinchley; general reporter, Mr. E. C. Evans. The papers include one on the title subject, by Professor J. W. Cobb.—Section V, "Organisations concerned with the Efficient Use of Fuel in Industry." Officials as in Section T. The papers include one on the title subject, by E. C. Evans.

Thursday, October 4, morning: Section W, "Economic Possibilities in the Better Co-ordination of Fuel Utilisation." Chairman, Sir D. Milne-Watson; vice-chairman, Mr. Frank Hodges; general reporter, Mr. T. C. Finlayson. The papers include "A Fuel Policy," by Sir Arthur Duckham.

Thursday, October 4, afternoon: Official visits to the Fuel Research Station, the National Physical Laboratory, and the Anglo-Persian Oil Co.'s Laboratories.

Friday, October 5, morning: Reports on the technical sessions of the Conference.—Closing meeting.

London Lead Conference: Official Statement

A CONFERENCE of lead producers from various countries was held in London this week, and on Wednesday the following notice was issued: The meeting considered: (*a*) The preparation of complete statistical information of world's production and consumption for the guidance of producers; (*b*) the present position of stocks and production; (*c*) the steps which may be necessary to regulate production to meet any falling off in consumption. The meeting made arrangements for the collection of complete statistical records of the industry. The position of world stocks was surveyed, and these were found to be inconsiderable. Arrangements were made to provide against any addition to present production and further, in case of urgent necessity, to curtail it. The view was taken that consumption was now keeping pace with the world's recently reduced production, and that there was no necessity to take any immediate action to reduce output. The domestic production of the United States of America, being insufficient for the country's needs, is not affected by the resolutions arrived at.

The Food and Drugs (Adulteration) Act

Necessity of Amending Legislation Urged.

The Food and Drugs (Adulteration) Bill, a consolidation bill on the subject of foods and drugs adulteration, was passed by Parliament last August, and the Foods and Drugs (Adulteration) Act, 1928, will come into operation on January 1, 1929. With regard to this Act, the Institute of Chemistry and the Society of Public Analysts have pointed out certain weaknesses. Their attitude in the matter is stated in the current "Journal of the Institute of Chemistry," and the statement is reprinted below.

THE Consolidation Bill on the subject of food and drugs adulteration (states the August *Journal of the Institute of Chemistry*), introduced in the House of Lords by Viscount Gage on May 23, was read a second time on June 12, when Lord Buckmaster indicated the desirability of certain amendments. The Marquess of Salisbury, in reply, intimated that the Government was unlikely to accept any amendment in a Bill, the purpose of which was to consolidate the existing law; but the Public Appointments Committee of the Institute of Chemistry, acting in co-operation with the Council of the Society of Public Analysts, felt that the action of the Government, in introducing a consolidating bill without considering amendments which were pressing and necessary, was likely to postpone indefinitely the opportunities of placing this legislation on a sound footing. It was considered desirable, therefore, to address a letter to the public press on the matter, and the following appeared in *The Times*, and the *Morning Post*, on July 9 and 10 respectively:—

The Food and Drugs (Adulteration) Bill was introduced into the House of Lords as a Government measure, and, according to the Prime Minister's statement of business to be taken, time is to be given by the House of Commons for its passage this Session. The Bill is intituled "An Act to consolidate the Sale of Food and Drugs Acts." As it is a consolidating and not an amending Bill, it would appear, first, that it should not include any provisions which alter the effect of the Sale of Food and Drugs Acts; and, secondly, that no amendment altering the law could be accepted. We complain about this Bill because it is merely to consolidate and not to amend.

No Remedy of Old Defects

Even as a consolidating Bill it does not bring under one Act all the Acts and Regulations to which those concerned with the production and control of food—public analysts and others—must have regard, the Sale of Food and Drugs Acts themselves being only a part of the legislation safeguarding the purity of food. The defects which time and experience have revealed in the old Acts are not remedied; inconsistencies and contradictions are perpetuated, and no attempt is made, or apparently can be made, in this Bill to bring the Acts more into conformity with modern conditions and present-day requirements.

Since 1875, the date of the parent Act, great changes have taken place in the methods of the manufacture and distribution of food. Many of these changes have been of immense value to the consuming public; in fact, had they not been introduced, the population of this country could not be supplied with the variety of food to which it now has access. These changes are not, however, unattended with dangers, and it is because we believe that legislation of to-day should take cognizance of the conditions of to-day and, if possible, provide for the conditions of to-morrow, that we address this letter. Comparison of our food laws with those of many foreign countries and of our Colonies provides a striking contrast in the treatment of this matter, not, we think, to the credit of this country.

We fear that the passage of this consolidating Bill, perpetuating that which is faulty or obsolete along with that which is good, will result in the postponement of that new and amending legislation which we believe to be necessary. It is difficult, within the limits of a letter, to deal, except in very general terms, with this complicated question, but the bodies we represent are anxious to contribute to the improvement of our food laws, and desire to call public attention to the inadequate treatment of the matter by Government and Parliament.

ARTHUR SMITHELLS, *President,*
Institute of Chemistry of Great Britain and Ireland.
EDWARD HINKS, *President,*
Society of Public Analysts and Other Analytical Chemists
July 6.

Further Action

The Society of Public Analysts, through its solicitors and parliamentary agents, represented certain pressing matters relating to the measure to the Clerk of Joint Committee on the Bill, and these received attention, but feeling that it was desirable that further publicity should be given to the views of the councils of the Institute and the Society, the following letter was communicated to all Members of the House of Lords and the House of Commons:—

You may have noticed in the issues of *The Times* and the *Morning Post* of July 9, a letter from Professor Arthur Smithells (President of the Institute of Chemistry) and Mr. Edward Hinks (President of the Society of Public Analysts) deploring the circumstance that the Food and Drugs (Adulteration) Bill, which is now under consideration by a Joint Committee, is intended to reproduce in consolidated form the Sale of Food and Drugs Acts, but not to amend them.

You may also have observed that on July 11 a short leader was published in *The Times* supporting the view that this objection is a sound one.

The Bill is not a complete consolidation of the existing food legislation, since it does not consolidate the following:—

(1) *The Milk and Dairies Amendment Act*, 1922.—Under this Act the addition to milk of colouring matter or of water (without respect to the Sale of Milk Regulations) or of reconstituted milk is forbidden.

(2) *Bread Acts Amendment Act*, 1922.—This Act deals with self-raising flour.

(3) *Public Health (Regulations as to Food) Act*. 1907.—Since 1923 important Regulations (Condensed Milk, Dried Milk, and Preservatives) have been made by the Ministry of Health.

Under the Bill the standards laid down in these Regulations are to be taken as determining the question of injuriousness to health, and the nature, substance and quality; but the remaining provisions relating to the statutory declarations of equivalent pints, and the labelling of condensed milk, and the declaration of the presence of preservatives in specified articles, are not included in the consolidating Bill.

Inconsistencies and Defects in the Bill

The Bill contains inconsistencies and contradictions, of which the following are examples:—

(*a*) According to the Bill, salt is a preservative; but according to the Preservative Regulations it is not.

(*b*) Section 7 (4) contemplates the permission of preservation in butter and margarine, whereas any preservative is prohibited by 1 (4) and 2 (4).

(*c*) The definition of milk-blended butter (section 34) would include certain reconstituted creams, and hence such would be limited to 24 per cent. of water—which would be absurd.

(*d*) The percentage of butter-fat in margarine is limited to 10 *per cent. of the fat content* in 6 (2), and to 10 *per cent. of the whole of the margarine* in 12 (1) (*f*).

(*e*) Margarine containing more than 16 per cent. of water may not be imported or consigned or be prepared for sale in a margarine factory; but there is no prohibition on the retail sale of such margarine.

The limit of water in butter in a factory and on importation is similarly regulated in the Bill, but the limit in the case of retail sale depends upon the Sale of Butter Regulations, 1902, and the wording in the Regulations leaves the maximum limit as presumptive only.

(*f*) The reference to "nature," "substance" or "quality" in 12 (4) should be in a form corresponding to the improved form used in 2 (1).

Perpetuation of Defects

The Bill, moreover, perpetuates the following defects:—

(*a*) In the case of packet goods, or other articles sold in the same state as received, there is no adequate machinery for proceeding against the real offender; either the retail trader is unjustly punished or the public is not protected.

It is to be observed that under Section 7 of the Preservative Regulations (which are not included in the new Bill) provision is made for proceeding against a previous seller at the same time, as, or instead of, the retailer.

(*b*) The subject of misdescription of certain foods calls for attention. The absence of satisfactory definitions has led to many difficulties. Under the Sale of Food and Drugs Acts the only articles for which there is power to make Regulations as to composition are milk, cream, butter, margarine, cheese and condensed milk; the powers in respect of cream and cheese have not been exercised.

(*c*) Section 17 (1) restricts the submission of samples to the public analyst to cases where the sampling officer "suspects" offences. The duty of a sampling officer is to take samples

of all kinds of foodstuffs sold within his area for submission to the public analyst. Sampling officers are not generally in a position to determine whether a sample should be suspected; most offences would escape detection if section 17 (1) were strictly followed. Section 18 (1) (*c*), however, introduces a further complication by the use of the words "if he thinks fit," which are inconsistent with 17 (1).

As affording particular examples, in which the defects of the Acts and the necessity for amendment are shown, mention may be made of custard powder and egg powder. Here the names of two well-known and valuable foods—custard and egg—have been used to describe articles which may have none of the constituents of either custard or egg. Owing to the absence of legal regulation, trade custom has established the sale of these articles, and, if not checked, will establish that of many similarly misdescribed articles of food.

Section 4, which provides protection in respect of mixed articles, labelled as such, needs far more careful definition; very small, though legible, print is employed to deceive the public.

The composition of such widely used foods as cheese, cream, and cream cheese is not legally regulated, though powers for such regulation exist. In the absence of regulation, a cream containing 50 per cent. of fat is "genuine," but so also is one containing only 20 per cent., or even less. A cream cheese containing less fat than ordinary whole-milk hard cheese is "genuine," equally with a rich high-fat cream cheese, though its creaminess is due more to water than to anything else.

Even with regard to milk, which is subject to regulations, the position is far from satisfactory. It is submitted that it is not right that what is in effect a skimmed milk (deficient in fat owing to incomplete milking) should be legal food for human consumption, whilst the richer portion of the milk may be left with the cow for her calf; yet that is the law at the present time.

Amendment in the direction of more powers for regulating composition, for legal definition, and for the establishment of legal standards, where desirable and possible, is what the food laws require.

The question of vitamin activity of foods may at the moment be in too uncertain a state for legal regulation, but it has to be envisaged for the future.

Amendment of the financial clauses of the Acts—as perpetuated in sections 15 and 17 of the Bill—should accompany amendment in other respects.

Need for Power to Initiate Reforms

The Institute of Chemistry and the Society of Public Analysts admit that the desired reforms must be gradual and must be preceded by due enquiry, but feel that the powers to initiate the reforms should be given immediately. The amendment of the Acts, in many particulars, is long overdue, and it is feared that the passage of this consolidating Bill, perpetuating that which is faulty or obsolete along with that which is good, will only result in the postponement of new and amending legislation which is absolutely necessary.

The process of consolidation without amendment is very largely a waste of time, and in any case it is suggested that it would be advantageous if representatives of the personnel mainly responsible for the actual administration of the Acts—namely, the public analysts themselves—were called into consultation in connection with this matter.

In asking you to give consideration to the views herein expressed, which affect the food supplies of the whole community, I am desired to remind you that the Institute of Chemistry has been established for over 50 years, and is incorporated by Royal Charter. Further, that under the Regulations as to competency of Public Analysts, issued by the Ministry of Health, its diplomas of Fellowship and Associateship, together with the certificate of having passed the examination in the chemistry ((and microscopy) of food and drugs,are accepted as evidence that the holders are qualified for appointment as public analysts. The public analysts of the country are very nearly all Fellows of the Institute, and constitute a very efficient service.

The Society of Public Analysts, which has also been in existence for over 50 years, has been devoted to the study of analytical chemistry with special relation to the adulteration of articles of food and drugs and commercial products, and its detection, and has throughout that period published *The Analyst*, which constitutes a record of our advances in the knowledge of the chemistry of food and drugs.

It is felt, therefore, that the Institute and the Society may, with good reason, look for consideration of their views in matters of this kind, since their aim is to secure efficient service and administration. RICHARD B. PILCHER,

July 23. Registrar and Secretary of the Institute of Chemistry.

Notwithstanding the representations referred to above, the Bill, with some slight modifications, was passed on August 3, and the Food and Drugs (Adulteration) Act, 1928, will come into operation on January 1, 1929.

Marking of Pumps

Recommendations of the Standing Committee

THE standing committee appointed by the Board of Trade under the Merchandise Marks Act, 1926, to consider applications for the marking of goods with the country of origin, has just issued its report with respect to the application regarding pumps.

The report states that inquiries with regard to semi-rotary wing pumps, pumps of all descriptions (other than semi-rotary wing pumps), and parts of all pumps were held together on July 9. The applicants in the case of semi-rotary wing pumps and parts were:—Ashwell and Nesbit, Ltd.; Lee, Howl and Co., Ltd.; and Neman Hender and Co., Ltd. The applicants in the case of other pumps were:—Drysdale and Co., Ltd.; Joseph Evans and Sons (Wolverhampton), Ltd.; Gwynnes Pumps, Ltd.; Hayward Tyler and Co., Ltd.; Lee, Howl and Co., Ltd.; Frank Pearn and Co., Ltd.; Pulsometer Engineering Co., Ltd.; W. H. Allen, Sons and Co., Ltd.; Harland Engineering Co., Ltd.; Hathorn Davey and Co., Ltd.; Mather and Platt, Ltd.; A. G. Mumford, Ltd.; Rees Roturbo Manufacturing Co., Ltd.; Tangyes, Ltd.; and G. and J. Weir, Ltd. W. H. Willcox and Co., Ltd., appeared in opposition to the proposal for the marking of semi-rotary wing pumps. There was no opposition to the marking of pumps other than the semi-rotary wing type. The applicants asked that the goods should bear an indication of origin at the time of importation as well as of sale or exposure for sale.

Cases For and Against

The ground for the application was the fact that pumps of foreign origin were sold or exposed for sale in this country without any marks on them to indicate that they were of foreign origin, and that a purchaser was liable to buy an imported pump under the impression that it was British-made. Applicants pressedf or an indelible mark on the ground that a mark which was easily removable would be ineffective owing to the number of hands through which some classes of these goods frequently pass. They asked at first that the indication of origin should be required to be cast in a conspicuous manner on each pump, a form of marking which could only be applied at the time of manufacture. But during the inquiry they stated that they would be satisfied with the alternative of an incised mark.

The opponents, who as stated above, were only concerned with semi-rotary wing pumps, opposed the application principally on the ground of the injury which would result to British trade. They said that imported semi-rotary wing pumps were frequently incorporated in machinery and plant of British manufacture, and that the pumps generally occupied such a prominent position that there was a serious risk that a mark of origin on the pump might be taken to apply to the whole of the plant or machine, although the cost of the pump was very small compared with the cost of the plant. This misapprehension as to the origin of the plant would have a harmful effect on the sales of such plant and would, therefore, damage an important British industry and result in unemployment.

Grounds for the Decision

After careful consideration the committee considered that the applicants had established a case for the making of an Order-in-Council. It did not think, however, that a case had been made out for an Importation Order.

As regards the marking of parts, it appeared that there was little import of parts at the present time, and, further, that for technical and commercial reasons such importation was not likely to increase. The Committee did not recommend, therefore, that parts of pumps should be marked.

Recommendations as to Marking

The Committee's recommendation was as follows:—The following descriptions of imported pumps, whether imported complete or in parts, shall bear an indication of origin at the time of sale or exposure for sale in the United Kingdom, namely: Pumps wholly or mainly of metal, excluding the following categories: Agricultural and horticultural spraying machines, hand syringes, cycle tyre pumps, grease-guns for motor-cars, pumps and syringes for surgical purposes, small hand-operated pumps for scientific, laboratory and educational use, and toy pumps. The indication of origin shall be cast or incised on each pump in a conspicuous manner.

The Synthetic Nitrogen Products Industry

Interesting Details of British and Foreign Practice

Recently, an interesting paper on "The Nitrogen Industry" was read by Dr. R. E. Slade (of Synthetic Ammonia and Nitrates) before the Society of Dyers and Colourists, and subsequently published in the Society's "Journal." In view of a number of interesting details given in the paper it is reprinted below.

DR. R. E. SLADE said that he proposed in his paper to give a brief résumé of the development of the nitrogen industry of the world, together with some details of the process employed in the factory of Synthetic Ammonia and Nitrates, Ltd., of Billingham-on-Tees, with which he was associated.

Prior to 1840, when Liebig demonstrated the importance of nitrogen in the form of nitrates for agricultural purposes, combined nitrogen, as potassium nitrate, was used almost entirely for the manufacture of gunpowder. The Chinese and Egyptians obtained their supplies locally, and with the European discovery of gunpowder the nitrate requirements were provided by India, China and Egypt. The increasing violence of wars led to increasing demands on the world's known nitrate resources, and the dependence of warring nations upon these supplies led to attention being paid to methods of production from internally available materials. In how far this was attained may be seen from the establishment in France, during the blockade of the Napoleonic wars, of the natural process in the shape of "nitrate farms," which led to a considerable amelioration of the crucial position in which that nation found herself. The discovery by Thomas Haenke, in 1809, of the caliche deposits of Chile, provided a temporary solution of the world's fixed nitrogen problem, and the development of a method for the recovery of high-grade sodium nitrate from crude material containing 17 to 50 per cent. $NaNO_3$ established the Chile nitrate industry, upon which the world was so dependent up to the period of the Great War. At first this nitrate was converted into potassium nitrate, for gunpowder production, by treatment with wood ashes. Subsequent development, in the explosives and chemical industry generally, led to its adoption as the raw material for the manufacture of nitric acid and thence other nitrates and nitro compounds.

Experiments on Nitrogenous Fertilisers

Leibig's observations of 1840 were followed in 1849 by the commencement of the experiments of Lawes, still in operation, at Rothamsted. These experiments showed immediately the necessity for supplying crops with combined nitrogen and thus initiated the use of nitrogen compound as fertilisers. The consumption has increased steadily from that time and an industry engendered by war has become one of the most important of peace.

The beginning, about 1866, of the replacement of beehive by by-product coke ovens tapped an additional supply of fixed nitrogen in that the nitrogen content of the coal appearing as ammonia was recovered as ammonium sulphate. The production increased along with the iron and steel industries; and the methods of recovery have been improved until at present the yield amounts to 28 lb. of sulphate per ton of coal coked. Demand followed production, and ammonium sulphate became rapidly the most popular nitrogenous fertiliser.

Up to 1898 the position remained unchanged, the world being provided with fixed nitrogen from Chile and the coke industry. That year, however, marked the real beginning of the synthetic nitrogen industry in the production, by Frank and Caro, of calcium cyanamide ($CaCN_2$) while attempting to make cyanides for use in gold extraction by the action of nitrogen on calcium carbide. In this year also came the now familiar warning of Sir William Crookes, in his address to the British Association, that the agricultural productivity of the world could be increased only by the fixation of atmospheric nitrogen in forms suitable for the production of fertilisers.

This warning was taken to heart by Germany, whose economic and geographical position necessitated her independence of external sources of fixed nitrogen. With the introduction of railways (1840-1870) she had developed into a great industrial nation with an increasing population and practically no colonial resources. In her attempts to produce all her own requirements she had embarked on a strong protective policy, and, having become the greatest consumer of Chile nitrate as a fertiliser for the production of food for her increasing population, rapidly realised the weakness of this position. From 1900 onwards, therefore, Germany embarked on a heavy programme of development in the fixation of nitrogen. The cyanamide process was developed at home, and but for the lack of cheap electric power the arc process would also have been adopted. In respect to the latter process, Germany contented herself with playing an important part in its financial and technical development in Norway.

The arc process consists essentially in subjecting air to very high temperatures in an arc furnace, whereby, providing the gases are subsequently cooled sufficiently rapidly, conditions approaching equilibrium are realised and approximately 2 per cent. of the nitrogen appears as nitric oxide, which is absorbed in water to produce nitric acid. Different forms of arcs are employed, being distinguished by the methods adopted for initiating and maintaining the flame. All give approximately the same efficiency, and from the operating aspect are characterised by the size of unit which can be successfully employed. The ruling capacities are—Birkeland-Eyde system 3,000 to 4,000 k.w., Schoenherr system 1,000 k.w., and Pauling system 600 k.w. per unit.

The Work of Haber

The outstanding development in the nitrogen fixation industry was the realisation of the direct synthesis of ammonia from nitrogen and hydrogen by Haber, first with van Ordt, and then with Le Rossignol and Greenwood. Having first determined the equilibria obtaining in ammonia-nitrogen-hydrogen mixtures at temperatures up to 1,000° C. and pressures up to 200 atmospheres, they realised the practicability, providing the reaction velocity could be satisfactorily increased, of the direct synthesis of ammonia at pressures in the region of 200 atmospheres. They then succeeded in showing that suitable catalysts could be made which would give satisfactory yields at commercially realisable space-velocities, and thus laid the foundations of the synthetic ammonia industry. The possibilities of this process were quickly realised by the Badische Anilin & Soda Fabrik, who in 1913–14 developed it into a technical process. In 1914–15, however, the cyanamide process was the more fully developed, and on the realisation by the German Government that the war would be protracted and one of their chief problems would be the supply of nitrates for explosives and agricultural needs, these plants were considerably enlarged. It was not until late 1915 that support was given to the Badische Anilin & Soda Fabrik synthetic ammonia plants.

The fixation of one ton of nitrogen by the arc, cyanamide, and direct ammonia synthesis processes requires in power respectively 8.4, 2 to 2.3, and $<0{\cdot}4$ k.w. year, so that it is readily appreciated that the success of the different processes, other things being equal, must depend upon the availability of cheap power, while in the absence of this consideration the success of the synthetic ammonia process must depend largely upon the cost of producing the more expensive of the raw materials, namely, hydrogen.

Details of the Ammonia Synthesis

The principal methods of preparing the nitrogen-hydrogen mixture for ammonia synthesis may be outlined as follows:—

(1) Hydrogen is prepared by the electrolysis of water or brine, while the nitrogen is obtained from air by burning with it the requisite quantity of hydrogen. This method was adopted by Synthetic Ammonia and Nitrates, Ltd., for their first plant erected in 1921 at Runcorn. It is employed also in conjunction with the Casale and Fauser systems of synthesis.

(2) Hydrogen is separated from coke oven gas by liquefaction and distillation, while the nitrogen is obtained as in (1), or from the liquefaction and distillation of air. This

method is employed for the Claude process and has been installed by the Linde Co. for the Casale plant.

(3) Water gas is produced from steam and coke and mixed with producer gas made from air, steam and coke, thus giving a gas containing hydrogen, nitrogen and carbon monoxide with some carbon dioxide. This is mixed with steam and passed over a catalyst, when practically all the carbon monoxide reacts with steam to produce hydrogen and carbon dioxide, thus—

$$CO + H_2O \longrightarrow CO_2 + H_2$$

The resulting mixture of hydrogen, nitrogen, and carbon dioxide, with some carbon monoxide, is then compressed to 25 to 50 atmospheres, and washed with water at that pressure to remove the carbon dioxide. The compression to 200 atmospheres is then completed and the last traces of carbon monoxide removed by washing with a solution of a cuprous salt. The gas is then ready to pass to the synthesis plant, the correct mixture of one volume of nitrogen to three of hydrogen being maintained by controlling the mixing of the water gas and producer gas. This method of producing the synthesis gas was worked out by Bosch for the I.G. Farbenindustrie A.-G., and is used in conjunction with the Billingham and the Atmospheric Nitrogen Corporation synthesis plants. It possesses the great advantage of lending itself to very large scale operation.

The synthesis processes in general use are essentially the same in that they are all based upon the discoveries of Haber and his co-workers. They are distinguished, however, by the pressures at which the synthesis is effected. These are given below :—

Process	Synthesis Pressure Atmospheres
Mont Cenis (Germany)	100
Atmospheric Nitrogen Corporation	
I.G. Farbenindustrie A.-G.	200
Billingham	
Fauser (Italy)	300
Casale	500 to 700
Claude	900

A pressure of 100 atmospheres is sufficient for the satisfactory synthesis of ammonia, but more space inside large forged vessels is required than at higher pressures, in addition to which the power required to circulate the gas increases as the synthesis pressure decreases. The Claude and Casale processes operating at 500 to 900 atmospheres, can employ much smaller forged vessels and have the advantage that the power required for the gas circulation is considerably reduced. The high rates of conversion possible at these pressures, however, result in the evolution of quantities of heat too great to be dealt with in the small spaces available, so that either the forgings employed must be very small, and large in number, or the conversion must be retarded as in the Casale process by leavings ammonia in the circulating gas. Either alternative leads to multiplication of apparatus with corresponding increases in the number of operatives. It is probable that from the engineering construction and operating view-points 200 to 300 atmospheres represents the most economical working pressure. It is sufficient to say that the cost of production of ammonia by this process is lower than by any other, a fact which may be ascribed to the big units of plant employed, allowing of the adoption in most cases of direct steam instead of electrical drives and certainly entailing low labour charges, owing to the small number of individual units requiring attention.

The Billingham Process

The Billingham process operating at about 200 atm. has proved eminently successful. The ammonia output of 20 tons per day in 1924 has increased to 235 tons per day at the present time and will be substantially further augmented during the next two years. The bulk of the present output is converted into ammonium sulphate by the well-established gypsum process, giving as a by-product chalk of immense importance for agriculture and forming a highly satisfactory raw material for the manufacture of cement. The remainder of the ammonia is converted into nitric acid, ammonium nitrate, and ammonium bicarbonate, whilst plants are under erection for the production of urea, ammonium phosphate, and complete fertilisers.

The Billingham factory may now be said to represent the British nitrogen industry, and this fact must impress itself on every mind as a matter of national importance. Its necessity both under the normal conditions of peace and the emergencies of war are too obvious to require further stress. The establishment of this industry is an achievement of which British technical men as a whole have indeed cause to be proud. The foundations laid with the original plant at Runcorn have led to the above results, which could have been obtained only with the enthusiastic and loyal co-operation of the large staff of chemists and engineers employed. These results are all the more remarkable when it is understood that they have been achieved by men the bulk of whom came, and are still coming, direct from the Universities, and certainly none of whom had those many years of practical experience which had previously been considered essential to qualify men for the design and control of chemical plant. The nitrogen industry owes its success in England, as in the other competing countries, to its foundation upon accurate scientific knowledge.

Chemical Engineering Developments

In answer to various questions, Dr. Slade said the product at Billingham was mostly ammonium sulphate and was largely exported. They also made ammonium nitrate and practically all the anhydrous liquid ammonia consumed in this country. The well-known catalysts worked quite well. Iron, with promoters such as bismuth or aluminium, was the most important catalyst both for the ammonia synthesis and the production of hydrogen. Methanol was produced from carbon monoxide and hydrogen by passing the mixture over a catalyst. With regard to the chemical engineering side, the process used at Billingham involved very big chemical engineering problems, and their laboratories included a considerable engineering research laboratory as well as a chemical research laboratory. The materials used had to be watched continuously, and the laboratories were being continually called upon for investigations into new materials or changes of materials in order to cheapen construction or to overcome difficulties that were encountered. In the chemical industry they were more and more demanding of the manufacturers of plant that the plant should be made to specification and should not simply be a plant to carry out a certain operation, but should be adaptable and changeable as required by new developments.

There was no doubt that the development of high-pressure chemistry would proceed much further. The Bergius process of coal liquefaction and the methanol synthesis were two of the newer developments. Probably the time was not far distant when high pressures would be used in the dye-making industry, as it was almost certain that some of the reactions which took place in the making of dyes could be carried out better at higher pressures. It would be an extraordinary coincidence if all the reactions were best conducted at the purely arbitrary pressure of one atmosphere.

In reply to other questions, Dr. Slade stated that ammonium bicarbonate was cheaper than ammonium carbonate and had the advantage that it possessed a very much lower vapour pressure and was fairly pure. The losses in transit were practically negligible, whilst the losses from packed ammonium carbonate were fairly large. He hoped that ammonium bicarbonate might be of use, and he would look forward with interest to developments in that direction. Asked whether it was likely that the high-pressure processes would eventually be replaced by commercial developments of the bacteriological processes whereby nitrogen was actually fixed by leguminous plants, he answered that such possibilities had to be kept in mind. There were two ways of considering the problem. Firstly, the production in huge fermentation tanks of a nitrogen product supplying the organism with its food. Secondly, the further development of the process of fixing nitrogen *in situ* in the fields ; a process which takes place to a considerable extent to-day, and which is employed in the ordinary five-year cycle of crops. He thought improvements might be made in the fixing of nitrogen *in situ*, but such processes were probably too slow for really intensive cultivation. If nitrogen were to be produced by fermentation processes in quantities comparable with the large synthetic nitrogen plants of to-day, the vats would need to be extraordinarily large and numerous, because fermentation processes were fairly slow. A single converter would produce from 20 to 50 tons of nitrogen per day as ammonia. Vats to produce that quantity by fermentation would be enormous.

Chemical Merchants' Affairs

A MEETING of the creditors in the matter of David and Julien Misell, trading as D. and J. Misell, and Vivus Products, 10, Rangoon Street, Crutched Friars, London, E.C., chemical merchants, was held on Thursday, September 13, at the Institute of Chartered Accountants, Moorgate Place, London, when Mr. P. Houston, representing the largest creditor, Lautier Fils, Ltd., presided. A statement of affairs which had been estimated by the debtors was presented, which disclosed liabilities of £1,873 16s. 4d., all due to sundry creditors. The net assets were £472 19s. 1d., or a deficiency of £1,400 17s. 3d. The accountant stated that if bankruptcy proceedings were instituted, the realisation for the unsecured creditors would be very meagre. The debtors wished to continue the business if possible, as they had hopes of making the concern a paying one in the near future. The debtors were optimistic because quite recently two new products had been placed on the market, and for that purpose the debtors had commenced another business which they termed Vivus Products. Although the products were only in their early stages, the sales had continued to show a steady increase. The two processes were said to be a secret formula, and one consisted of a process for weed-killing, and the other was an insecticide process. It was proposed to hand over the existing business of D. and J. Misell and Vivus Products to a private limited company, the company to issue debentures to trustees for the whole amount of the debts now outstanding. The trustees were to be appointed by the creditors, and they would have a seat on the board of directors, and full control of the company. As profits became available, payments would be made to the creditors in redemption of debentures. The chairman pointed out that it would be impossible to agree to the scheme which had been outlined, because the debtors who had called the creditors together would not be in a position to transfer their assets to a limited company. He said the only way to get over the difficulty would be to execute a deed of assignment to a trustee and give the trustee power to resell the assets to a limited company if a satisfactory offer was made. After discussing the position at considerable length, it was resolved that the estate should be dealt with under a deed of assignment in favour of Mr. W. J. J. Osborne, Balfour House, Finsbury Pavement, E.C., as trustee. A committee of inspection was also nominated. A creditor mentioned that he had a writ issued against the debtors, and said that unless they made an offer of 10s. in the £, he would take steps to have the matter dealt with in bankruptcy.

Among the creditors are: A. Boake Roberts and Co., Ltd., £48; Williams Bros. (Hounslow), Ltd., £18.

Activities of the Chemical Engineering Group

THE first meeting of the Chemical Engineering Group of the Society of Chemical Industry in the forthcoming session will be one arranged by the Society's London Section, when Mr. W. J. A. Butterfield will deal with "Road Surfacing Materials." On October 5 the Group has arranged a meeting at which Mr. F. H. Rogers will read a paper on "Factory Floors." A discussion of the recent visit of the chemical engineers and chemists to Canada and America will take place at an informal meeting held jointly with the London Section and the Institution of Chemical Engineers at the Criterion Restaurant, on October 22. On November 1 there will be a joint meeting with the Bristol Section, when W. F. Darke and E. Lewis will read a paper on "Glycerin and Its Substitutes in Industry." New developments in "The Commercial Distribution and Handling of Liquid Gases" will be dealt with by Dr. W. R. Ormandy at a meeting on December 14. The first meeting in the new year will take place on January 11, 1929, when Professor P. B. Haigh will give a paper on "The Relative Safeties of Mild and High-Tensile Alloyed Steels Under Alternating and Pulsating Stresses," while on February 8 Professor W. E. Gibbs will discuss the "Rôle of Surface Energy in Chemical Engineering." "The Design of Industrial Gas Furnaces" will be the subject of a paper by Dr. C. M. Walter at a joint meeting with the Birmingham Section on April 12. The annual general meeting will be held in London on May 3.

Patent Law Reform

Paper at Aslib Conference

AT the fifth annual conference of the Association of Special Libraries and Information Bureaux, at New College, Oxford, Dr. A. P. Thurston, on Friday, September 14, read a paper on "Patent Law Reform, with special reference to the search for novelty." He suggested that in order to encourage invention and manufacture, patents should be cheaper to obtain and to maintain. The granting of a patent should be a hallmark of its soundness, and better facilities should be provided to protect the inventor or discoverer. With regard to cheaper patents, there were many inventions for small details which did not appear to justify the expense and trouble of a full patent. Nevertheless, the manufacture of these articles would benefit the public. Such cases could be dealt with by petty patents, which could be granted for a small fee, without search, for five or six years. A patent to be valid must be novel. The standard of novelty had been raised to proof of absolute novelty within the realm, but the official search was only partial, and was limited to British patent specifications for 50 years before the application.

The annual loss to industry and commerce due to the retention in patent law of this uneconomic standard of novelty was enormous. British patents were among the most expensive in the world owing to the annual renewal fees after the fourth year. Patents might be cheapened and their value in starting new manufactures enhanced by extending the period of exemption from four years to six years, and by limiting the search on the present lines to a period of five or six years, and to all subsisting patents before that period. It would appear that the present policy of the patent law was to thwart the inventor in every way possible, to cut down his protection as far as possible, to make it as expensive as possible for him to protect his rights, and if possible to destroy his rights altogether. If inventors and manufacturers were given more opportunity of pressing their views on questions of patent law, a much better working scheme could be obtained for increasing and improving the arts and manufactures of the realm.

He knew cases where inventions had been submitted to a Government Department or manufacturers and rejected by them, and abandoned by the applicant, and afterwards re-patented by others. He suggested that either a patent should be held invalid if it could be proved that the same invention had been submitted to a Government Department or a manufacturer within five years of the date of the later application, or that the first inventor should be entitled to claim a certificate freeing him from the danger of infringement proceeding by the patentee and giving him the right to manufacture according to his original invention.

Society of Public Analysts: Forthcoming Meeting

THE next meeting of the Society of Public Analysts will be held on Wednesday, October 3, at the Chemical Society's Rooms, Burlington House, Piccadilly, London, W.1, at 8 p.m. The following papers will be read: "Polarimetric Determination of Sucrose in Milk and Sucrose Mixtures," by G. W. Monier-Williams, O.B.E., Ph.D., F.I.C.; "The Analysis of Sugar Degradation Products by Selective Fermentation," by T. McLachlan, F.I.C.; and "Investigations into the Analytical Chemistry of Tantalum, Niobium, and their Mineral Associates. XIII. A New Method for the Separation of Zirconium and Hafnium from Tantalum and Niobium," by W. R. Schoeller, Ph.D., and E. F. Waterhouse (work done under the Analytical Investigation Scheme).

Annual General Meeting of Chemical Industry Club

THE annual general meeting of the Chemical Industry Club will be held in the rooms of the Club, 2, Whitehall Court, London, S.W.1, at 8 p.m., on Monday, October 29. Among the business to be transacted will be the election of eight candidates to fill vacancies on the committee. Of these vacancies, five are caused by the retirement of present members of the committee, four of whom offer themselves for re-election. Nominations of candidates to fill the vacancies must be in the hands of the Secretary not later than October 4. Each nomination must be signed by two members of the club, who have ascertained that their candidate is willing to serve if elected.

From Week to Week

MR. EMILE MOND tenders his sincere thanks for the many kind messages he has received in his recent bereavement.

MR. E. W. TREND, of the Mount Lyell Chemical Works, has been appointed to the Council of the Society of Chemical Industry of Victoria.

THE MANCHESTER COMMERCIAL LIBRARY, in the Royal Exchange, now contains the full B.D.C. range of colour books, which are available for consultation by the general public.

A CONVERSAZIONE and exhibition of apparatus is being arranged by the committee of the London and South Eastern Counties Section of the Institute of Chemistry, to be held at the Institute, on Wednesday, October 24.

A LARGE WAREHOUSE at Whitehaven, the property of Wilson and Kitchen, wholesale chemical merchants, was completely gutted by fire early on Monday morning. Chemicals, oils and paints, and a motor lorry were involved in the blaze.

A FIRM CATERING for the rubber trades' requirements wishes to enter into agreements with manufacturers of accelerators, colours, zinc oxide, etc., for purchase upon an exclusive merchanting or sole agency basis. For further details, see our advertisement columns, p. xix.

THE WELSH TINPLATE MANUFACTURERS on Tuesday met at Swansea and cofirmed a provisional agreement made on their behalf by Mr. H. Coulson Bond with American tinplate manufacturers, with the object of securing a division of the export trade for the two countries.

THE JUBILEE CELEBRATIONS of the firm of W. H. Willcox and Co., Ltd., were held on Saturday, September 15, at the Willcox Social and Athletic Club's sports ground, Elmer's End. The fête and sports were attended by about 450 people, these being members of the firm and their families.

EXPORTS OF CHINA CLAY and related materials from the United Kingdom during August totalled 63,905 tons, of value £135,148. Imports into the United Kingdom totalled 230 tons (value £371), as follows :—From Germany, 10 tons (£96) ; and from the Channel Islands, 220 tons (£275).

THE REPORT on the proposed revision of by-laws for regulating the transport of petroleum spirit in the Port of London, which has been prepared by Major T. H. Crozier and Professor J. S. S. Brame for the Ministry of Transport, as the result of their recent inquiry, has now been published by H.M. Stationery Office.

IN HONOUR of the visit of British chemical engineers and chemists to the United States, the Hercules Powder Co., of Wilmington, Delaware, issued a special edition of its magazine, *The Hercules Mixer*, containing biographies and photographs of Sir Alexander Gibb, Mr. F. H. Carr, Professor J. F. Thorpe, Professor J. W. Hinchley, Dr. R. S. Morrell, and Dr. L. A. Jordan. Among a number of interesting articles published in the same issue is one on " Roger Bacon, England's Thirteenth Century Powder Maker," which is illustrated with drawings.

SIR HARRY MCGOWAN, president and deputy chairman of Imperial Chemical Industries, made presentations of medals and watches for long service to members of the Midland factories (metal group) of the company, which comprises Kynoch's, Ltd., William Cooper and Goode, Ltd., Hughes Stubbs Metal Co., Kings Norton Metal Co., Hadley and Shorthouse, and Grice, Grice and Son, Ltd. The chairman of the function was Mr. H. O. Smith, managing director of the Metal Group of Imperial Chemical Industries. On Monday, at Liverpool, Sir Max Muspratt made a number of presentations of long-service awards to members of the staff of the United Alkali branch of I.C.I.

AN EXTRAORDINARY GENERAL MEETING of Amalgamated Anthracite Collieries, Ltd., was held in London on Monday, when resolutions were passed for increasing the capital of the company to provide for the acquisition of a controlling interest in Welsh Anthracite Collieries and Henderson's Welsh Anthracite Collieries. Moving the resolutions, Lord Melchett said that now that they had been able to combine practically the whole of the industry they would be able to push the sale of anthracite in a way that had never been, possible before. Already losses were being turned into profits —moderate profits, but profits—and he believed they had turned the worst corner the industry had known.

LORD MELCHETT, accompanied by Mr. and Mrs. Henry Mond, left Southampton on Wednesday morning on the *Homeric* for New York. The party will proceed immediately after arrival at New York to Toronto, where Lord Melchett will address the Canadian Club, and thence to inspect the Mond Nickel mines and developments at Coniston, Ontario. Lord Melchett will be joined at Montreal by Sir Harry MacGowan. The party will later proceed to New York for business purposes. During his stay in the United States, Lord Melchett will give addresses to various public and other bodies, including a lecture on " Industrial Co-operation " to the economics faculty at Harvard University. The party will return to England at the end of October.

MR. OSWALD BALFOUR, director of Harris, Forbes and Co., has joined the board of Peco, Ltd.

THE TEES BRIDGE IRON WORKS of Pease and Partners, Ltd., are to be permanently closed, states a Newcastle report.

MR. H. E. METCALF has resigned his position with Babcock and Wilcox, Ltd., to become general manager of Ruths' Steam Storage, Ltd.

A NEW HORMONE, " Interenin," containing 33 per cent. of chlorine, has been obtained by the American biologist Goldzieher from the suprarenal gland.

RECENT WILLS INCLUDE :—Mr. Stanley Walter Duttson, of William Duttson and Co., saccharine and caramel manufacturers £104,776 (net personalty £99,542).

THE ANNIVERSARY DINNER of the Pharmaceutical Society of Great Britain will be held at Hotel Victoria, Northumberland Avenue, London, on Wednesday, October 3.

EIGHTY-FIVE British delegates who had been taking part in the annual meeting of the Society of Chemical Industry in New York arrived home on Monday. The meeting will be held next year at Manchester.

THE LEATHER CHEMISTS' CONFERENCE (the sixteenth bi-annual conference of the International Association of Leather Trades Chemists) was held in Hamburg from September 11 to 16, under the presidency of Professor Bergmann.

A SAO PAULO, BRAZIL, COMPANY has obtained a franchise for establishing a nitrogen fixation industry, according to a cable from the United States commercial attaché at Rio de Janeiro. The company has a capital of approximately $6,000,000.

A NON-INFLAMMABLE CELLULOID has resulted from research following on the fusion of the Celanese Co. and the Celluloid Corporation in New York. The substance is available in the United States, at prices which are said to be 15–25 per cent. below those of ordinary celluloid.

A FIRE BROKE OUT at the chemical works of Stainsby and Lyons, near Pontefract, on Monday night, in a battery of 13 tar stills, after the works had been closed. The outbreak, thought to be due to the cracking of a still-head and the escape of hot gas, was soon got under control.

THE FACTORY of the Abertillery Pitch and Benzole Co., Abertillery, was almost gutted by fire last week. The fire, which originated through boiling tar spilling from a still into a fire box, destroyed by-product plant and a large stock of tar and creosote. The damage is estimated to be about £4,000.

SPACE TO THE EXTENT of 6,520 square feet has already been taken in the Scientific Instrument Section of the British Industries Fair, and 56 firms are participating. This compares with the 5,900 square feet taken by 52 firms in 1928 Fair. The total space allotted for the Fair is 211,000 square feet, and 781 firms are taking part.

LIEUT.-COLONEL J. T. C. MOORE-BRABAZON has accepted the invitation of the Council to become president of the Junior Institution of Engineers in succession to Sir Murdoch MacDonald. His induction will take place at a meeting to be held at the Royal Society of Arts on Friday, December 7, when he will deliver his address.

RETAILERS OF NITRATE OF SODA in Europe and the Mediterranean countries have ordered 3,000,000 tons of nitrate for delivery next season, says a cable received in Liverpool. This is double the quantity which the Producers' Association estimated would be taken by this area. A further order for 91,000 tons of nitrate comes from Japan.

IN AN ACCIDENT which occurred on Tuesday at Billingham, George Anderson, aged 57, was killed, and Patrick Dictan and Charles Pope were badly injured. The men were working in a shaft in a gypsum mine about 100 feet below the surface, and were using a compressed air drill, when there was an explosion, the cause of which has not yet been determined.

MR. H. J. YOUNG, F.I.C., announces that he has, as from August 1, taken into partnership Mr. George Shaw, M.Sc., and will practise with him under the style of Young and Shaw, analytical and consulting chemists, at 497A, Shields Road, Walker Gate, Newcastle-on-Tyne. Until lately Mr. Shaw was for three years in partnership with Mr. C. J. H. Stock, public analyst for Durham County. Mr. Young will, of course, also continue his practice at 3, Central Buildings, London, S.W.1.

ARTIFICIAL SILK NEWS.—The third conference of the European artificial silk companies commenced on Friday, in Baden-Baden, and will go on till Friday next, September 28. Among the questions to be discussed are prices and the production of mixed fabrics containing artificial silk.—Kirklees, Ltd., of Bury, are to make artificial silk by the cuprammonium process, and the initial production will be about two tons a day. The Kohorn Company, of Chemnitz, will have the contract for the plant.—Confirmation is now to hand of the erection of an artificial silk factory in Roumania. The manufacture of material will be in the hands of the Erste Oesterreichische Glanzstofffabrik A.G., St. Pölten, and the Vereinigten Glanzstofffabriken A. G., of Elberfeld.

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

295,477. High Grade Fertilisers, Manufacture of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt-Ges., Frankfort-on-Main, Germany. Application date, June 25, 1927.

The object is to obtain a mixed fertilizer which does not contain non-fertilising substances such as sodium, calcium, hydrochloric or sulphuric acid radicles. Potassium chloride is treated with calcium fluoride, silicic acid and hydrochloric acid to obtain potassium fluosilicate, which is then treated with aqueous ammonia to obtain a solution of potassium fluoride and ammonium fluoride, with a deposit of hydrated silica which is used again in the first reaction. Raw phosphate is treated with nitric acid, and the solution mixed with the potassium-ammonium fluoride solution to obtain a solution which is neutralised with ammonia and then contains only potassium and ammonium nitrate or phosphate. This is evaporated to dryness and used as a fertiliser. The calcium fluoride is used again in the first reaction.

295,506. Grey to Black Vat Dyestuffs, Production of. L. B. Holliday and Co., Ltd., and C. Shaw, Leeds Road, Deighton, Huddersfield. Application date, July 28, 1927.

These dyestuffs are obtained by treating dibenzanthrone with sulphuric acid and a salt, other than a dichromate, capable of reacting with the sulphuric acid to produce an unstable, highly oxygenated acid and/or peroxide. Suitable salts are chlorates and permanganates. The products give grey-black fast shades on cotton, and examples are given.

295,645. Vat Dyestuffs of the Anthraquinone Series, Manufacture of. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 14, 1927.

These dyestuffs are obtained by converting the diphthaloyl acridones into nitro derivatives by means of strong nitric acid or nitric sulphuric acid. The nitro derivatives may be reduced to the amino derivatives, and the amino acridones may be acylated. Fast greyish blue shades are obtained. Examples are given of the treatment of 3 : 4 : 5 : 6-diphthaloyl acridone and 1 : 2 : 5 : 6-diphthaloyl acridone with nitrating agents, reduction to amino compounds, and treatment with benzoyl chloride.

295,734. Complex Metallic Compounds, Manufacture of. W. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, March 17, 1927.

Specification 213,285 (See The Chemical Age, Vol. x, p. 578) describes the manufacture of soluble antimony compounds comprising pyrocatechin sulphonic acids and pyrocatechin carboxylic acids. In this invention complex salts, of pyrocatechin sulphonic acids other than those of antimony, bismuth, and alkali and alkaline earth metals are made by the reaction of an oxide, hydroxide, or carbonate of a metal with a salt of a pyrocatechin sulphonic acid with an alkali, ammonium, or an amine. To obtain a salt with a neutral reaction it is necessary to add additional alkali or amine, except in the case of some salts such as cadmium. Compounds of pyrocatechin carboxylic acid and pyrogallol sulphonic acid are obtained in a similar manner. Salts can be prepared from metals such as cadmium, iron, manganese, zinc, chromium, tin, vanadium, copper, gold, lead, and arsenic, and a large number of examples are given.

295,744. Organo Arsenic Compounds. G. Newbery, and May and Baker, Ltd., Garden Wharf, Church Road, Battersea, London, S.W.11. Application date, March 23, 1927.

Oxyacetic acid derivatives of arylarsenic compounds are obtained by condensing a halogen-substituted acetic acid, such as chloracetic acid, with an *o*-aminohydroxy-arylarsenic compound, such as an *o*-aminohydroxy-arsinic acid, the ortho amino group containing a stable substituent not removed under the conditions of the condensation. The product can be hydrolysed to eliminate the substituent from the amino group whereby the isoxazine ring is simultaneously formed. Thus, 3-acetylamino-4-hydroxyphenyl-arsinic acid may be treated with sodium chloracetate to obtain 3-acetylamino-4-phenoxyacetic acid-1-arsinic acid, which may be hydrolysed in alkaline or acid medium to 3-hydroxy-1 : 4-benzisoxazine-6-arsinic acid. Several examples are given.

295,770. Vat Dyestuffs, Manufacture of. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester, A. Davidson and A. Shepherdson, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, May 26, 1927.

A 1-arylido-anthraquinone-2-carboxylic acid is heated in a high-boiling organic solvent such as trichlorbenzene with a large excess of thionyl chloride, phosphorus pentachloride, or similar reagent till hydrochloric acid is no longer evolved. An intermediate product which is probably the chloroacridine is formed. This need not be isolated, but the solution may be treated at 160° to 190° C., with chlorine, with or without a small proportion of a chlorine carrier such as iodine. Examples are given in which the starting materials are 1-anilido-anthraquinone-2-carboxylic acid and 1-β-naphthyl-aminoanthraquinone-2-carboxylic acid.

295,824. Aromatic Amines from Nitro Compounds, Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 4, 1927.

It has been found that aromatic nitro compounds can be reduced to amines by solutions of soluble sulphides in insufficient amount for the reduction, if hydrogen or carbon monoxide is present and the reaction is effected at a higher temperature and pressure. A solution of a base mixed with sulphur may be used, also solutions of polysulphides and thiosulphates. A small part of the thiosulphate is converted into sulphate under the reaction conditions, and this is not available for the reaction. The amount of salt used may be such that after the reaction the whole of the added sulphur is converted into sulphate, so that the product consists of amine and an alkali or ammonium sulphate. The temperature should be above 100° C., and pressure above 20 atmospheres, and a catalyst may be employed, such as silica or alumina gel, heavy metals or their oxides, hydroxides, sulphides, or carbonates. Examples are given of the reduction of nitrobenzene to aniline, *m*-dinitrobenzene to *m*-phenylene-diamine, *p*-nitraniline to *p*-phenylene-diamine, *p*-nitrophenol to *p*-aminophenol.

295,825. Mixed Fertilisers, Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 5, 1927.

Mixed fertilisers can be obtained by evaporating ammonium nitrate to about 90 per cent. concentration and adding hot or cold fertiliser salts, such as ammonium or potassium sulphate, potassium chloride, calcium phosphate or gypsum, but the products are liable to cake during storage. It is now found that a dry non-caking product can be obtained if the ammonium nitrate solution is evaporated to 2 to 4 per cent. water content and mixed with a solid salt at such a temperature that it remains liquid. The small amount of water present is thus almost entirely evaporated, and the product contains only 0.15 to 0.25 per cent. of water. It remains in the form of a fine dry powder. Examples are given of the preparation of fertilisers comprising ammonium nitrate and potassium chloride, and ammonium nitrate and ammonium sulphate.

295,848. Phosphoric Acid and Phosphates, Manufacture of. I. E. Weber, St. Kilda, Cumberland Road, Leagrave, Bedfordshire, H. E. Alcock, The Knoll, Luton, and B. Laporte, Ltd., Luton. Application date, September 22, 1927.

The object is to remove the colour from phosphoric acid or a mixture of phosphoric acid and acid phosphate obtained

from mineral phosphate. The product is heated at least to 150° C., but not sufficiently high to convert the phosphoric acid into pyrophosphoric acid. In an example, superphosphate is heated to 150° to 200° C., and then leached with sulphuric acid to obtain phosphoric acid, which may be converted into sodium acid phosphate or pyrophosphate, which are obtained in a good white colour.

295,874. ADSORPTION PROCESSES. S. Pilat, 40 ul, Dwernickiego, Lwow, Poland. Application date, November 22, 1927.

An adsorbent such as active carbon or silica gel is arranged in a number of containers connected in series. The gas to be treated is passed through the whole of the adsorbent in one direction, and in the reverse direction through only part of the adsorbent. In this manner it is found that a more uniform adsorption takes place than if the gas had been passed through the whole of the adsorbent in both directions.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 267,155 (I. G. Farbenindustrie Akt.-Ges.) relating to manufacture of unsaturated hydrocarbons, see vol. xvi, p. 468; 271,869 (E. Weitz), relating to separation of alkali salts, see vol. xvii, p. 134; 273,256 (R. Cross), relating to conversion of heavier hydrocarbons into lighter hydrocarbons, see vol. xvii, p. 201; 273,665 (I. G. Farbenindustrie Akt.-Ges.) relating to condensation products from naphthalene and naphthalene derivatives, see vol. xvii, p. 221; 274,492 (Compagnie de Bethune), relating to synthesis of alcohols, see vol. xvii, p. 291; 282,379 (A. R. Frank and N. Caro), relating to hydrocyanic acid, see vol. xviii, p. 183; 285,847 (Soc. Générale Metallurgique de Hoboken), relating to sulphuric acid, see vol. xviii, p. 417; 286,284 (I. G. Farbenindustrie Akt.-Ges.), relating to catalysts of high mechanical strength, see vol. xviii, p. 440.

International Specifications not yet Accepted

293,792. OXYAMINO-BENZENES. I. G. Farbenindustrie. Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, July 11, 1927. Addition to 280,873.

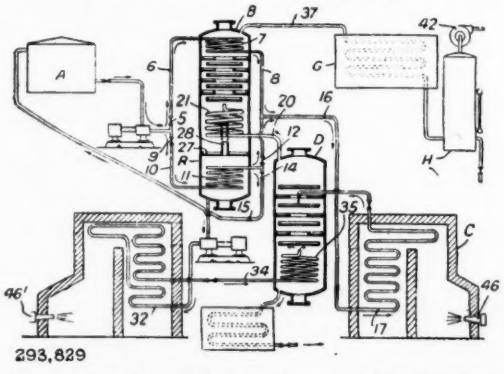
4-Amino-1-alkoxybenzene or the corresponding N-derivative is treated with sulphuric acid to obtain 4-amino-1-oxybenzene or N-alkyl or oxyalkyl derivatives. Examples are given.

293,806. SULPHONATED OILS. Oranienburger Chemische Fabrik Akt.-Ges., 1A, Hardenbergstrasse, Charlottenburg, Berlin. (Assignees of Chemische Fabrik Milch Akt.-Ges., 67, Oranienburgerstrasse, Berlin.) International Convention date, July 12, 1927.

A mixture of linseed oil and oleic acid or a fatty material containing glycerine oleate is sulphonated in the usual manner and is used in the textile and leather industries.

293,829. CRACKING OILS. C. J. Pratt, c/o Larking Engineering Co., Granite Building, 4th Street, St. Louis, Mi., U.S.A. International Convention date, July 13, 1927.

Crude oil from a tank A is preheated in coils 7, 11, in a dephlegmator tower B, and passes through pipe 16 to coils 17



of a furnace 17 where it is heated to 400° F. The products pass to a dephlegmator D, and the vapour through pipe 20 and coil 21 into dephlegmator B. The liquid collects on a plate 27, and overflows into the lower part R, from which it passes into a cracking coil 32 heated above 1,100° F. The products pass through coil 35 to tower D and mix with vapour from coil 17. The mixture passes through pipe 37 to a condenser G and tower H, the non-condensible gases being drawn off for use in the burners.

293,837. PHOSPHATIC FERTILIZERS. J. van der Plaes, 118, Chaussée de Capellen, Brasschaet-St. Mariaburg, near Antwerp, Belgium. International Convention date, July 13, 1927.

A finely divided mixture of raw phosphate, manganese ore, silica, and an alkaline substance such as sodium or potassium carbonate is heated to sintering point, the proportions being such that the product has the formula $P_2O_5.SiO_2.4CaO.Na_2O$. The aluminium and iron are in the form of $Al_2O_3.MnO$ and $Fe_2O_3.MnO$.

293,863. PHENOLS. Schering-Kahlbaum Akt.-Ges., 170, Müllerstrasse, Berlin. International Convention date, July 14, 1927. Addition to 273,686. (See THE CHEMICAL AGE, Vol. XVII, p. 222.)

m-Cresol and acetone are condensed to obtain 4 : 4¹-dimethyl-2 : 2¹-dioxydiphenyl-dimethyl-methane, which is then heated to 250° C. to depolymerize it and obtain 3-methyl-6-isopropylene-phenol.

293,872. UREA-FURFUROL CONDENSATION PRODUCTS. H. Kappeler, 50, Rütlistrasse, Basle, Switzerland. International Convention date, July 14, 1927.

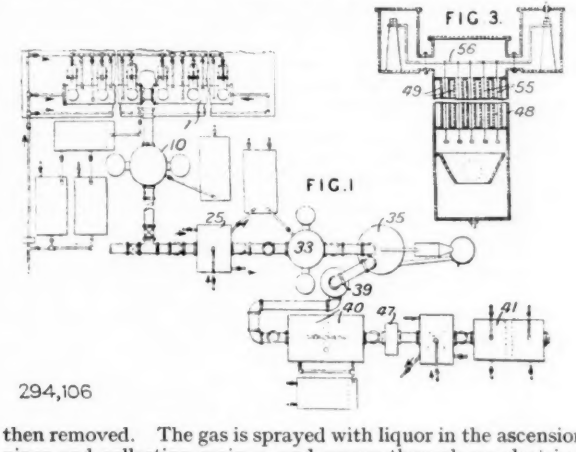
Furfurol is condensed with urea in stages, first without and then with a catalyst to obtain a black composition resembling ebonite. Softening agents, fillers, and colours may be added.

293,874. THYMOL AND MENTHOL. Schering Kahlbaum Akt.-Ges., 170, Müllerstrasse, Berlin. International Convention date, July 15, 1927. Addition to 273,685. (See THE CHEMICAL AGE, Vol. XVII, p. 222.)

An acyl derivative of 3-methyl-6-isopropylene-phenol or a mixture of the acylated and non-acylated compounds is catalytically hydrogenated till 2–8 atoms of hydrogen are taken up, and the product is subsequently saponified. The formyl and acetyl derivatives are suitable. Thymol and menthol are obtained.

294,106. PURIFYING COAL GAS. Barratt Co., 40, Rector Street, New York. (Assignees of S. P. Miller, Tenafly, N.J., U.S.A.) International Convention date, July 16, 1927.

Coal gas is cooled to 200°–250° C. to remove heavy tar and pitch, and creosote oil, ammonia, light oils, and benzol are



then removed. The gas is sprayed with liquor in the ascension pipes and collecting main 7, and passes through an electrical precipitator 10 to a condenser 25 at 80°—100° C., into which carbolic oil may be sprayed. The gas then passes through an electrical precipitator 33 to remove oil, an ammonia absorber 35, acid separator 39, condenser 40 for recovering light oils, exhauster 47, and benzol scrubber 41. The precipitator consists of a casing 48 with tubes 49 containing electrodes 55 suspended from a bar 56.

LATEST NOTIFICATIONS.

296,974. Continuous process for the manufacture of acetic acid in the anhydrous state from its aqueous solutions. Soc. Anon. Des Distilleries Des Deux Sevres. September 10, 1927.

296,700. Conversion of hydrocarbons of high boiling point range into valuable products, especially those boiling at low temperatures. I.G. Farbenindustrie Akt.-Ges. September 5, 1927.

296,984. Manufacture and production of non-knocking engine fuels of the benzine type. I.G. Farbenindustrie Akt.-Ges. September 10, 1927.
296,782. Process for the manufacture of isothiourea ethers. Schering-Kahlbaum Akt.-Ges. September 9, 1927.
296,758. Manufacture of vat-dyestuffs of the anthracene series. I.G. Farbenindustrie Akt.-Ges. September 7, 1927.
296,730. Manufacture of white titanic acid. I.G. Farbenindustrie Akt.-Ges. September 6, 1927.
296,988. Process for producing electrolytic deposits of chromium which adhere well and penetrate well into any recesses. Poetzsch, W. G. September 10, 1927.
296,989. Process for eliminating excess sulphuric acid from chromium electrolytic baths. Poetzsch, W. G. September 10, 1927.
296,761. New sulphur-containing hydroxyquinones. I.G. Farbenindustrie Akt.-Ges. September 7, 1927.
296,991. Manufacture of oil lacquers and varnishes. I.G. Farbenindustrie Akt.-Ges. September 10, 1927.
296,992. Manufacture of oil lacquers and varnishes. I.G. Farbenindustrie Akt.-Ges. September 10, 1927.
296,999. Manufacture of sulphonated derivatives of unsaturated fatty acids. I.G. Farbenindustrie Akt.-Ges. September 10, 1927.
297,001. Manufacture of ortho-halogen-anthraquinone-carboxylic acids. I.G. Farbenindustrie Akt.-Ges. September 9, 1927.
297,002. Manufacture of new vat-dyestuffs and intermediate products. Soc. of Chemical Industry in Basle. September 9, 1927.
297,003. Manufacture of dyestuffs containing metal. Soc. of Chemical Industry in Basle. September 10, 1927.

Specifications Accepted with Date of Application

272,483. Low boiling point oils, Manufacture and production of—by cracking mineral oils, tars, and the like. I.G. Farbenindustrie Akt.-Ges. June 11, 1926.
272,924, 273,299 and 279,401. Dyestuffs of the anthracene series, Manufacture of. I.G. Farbenindustrie Akt.-Ges. June 15, 1926, June 24, 1926, and October 21, 1926. 273,299 and 279,401, additions to 272,924.
273,672. Electrolytic cells. Allen Electrolytic Cell Corporation. July 3, 1926.
274,122. Feeding materials into high pressure vessels. I.G. Farbenindustrie Akt.-Ges. July 10, 1926.
279,377. Methanol, Catalytic production of. Commercial Solvents Corporation. October 25, 1926.
283,913. Tetra alkyl lead, Preparation of. H. W. Daudt. January 20, 1927.
288,543. De-oxidation of molten metals or alloys. Siemens and Halske Akt.-Ges. April 11, 1927.
288,571. 5-iodo-2-amino-pyridine, Process for the manufacture of. Schering-Kahlbaum Akt.-Ges. April 12, 1927.
291,340. 7-acyl-amino-1 : 4-naphthoquinones, Manufacture of. I.G. Farbenindustrie Akt.-Ges. May 28, 1927.
293,753. Preparing thymol. Rheinische Kampfer Fabrik Ges. July 11, 1927.
296,458. Intermediate compounds for the preparation of dyestuffs. British Dyestuffs Corporation, Ltd., J. B. Payman, and E. G. Bainbridge. May 2, 1927.
296,327. Substituted 4 : 4^1-dihydroxy-5 : 5^1-acyl-amino-arseno-benzenes, Manufacture of. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) May 27, 1927.
296,386. Vat dyestuffs, Manufacture and production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) May 30, 1927.
296,473. Azo-dyestuffs, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) June 1, 1927.
296,490. New condensation products of the benzanthrone series, Process for the manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) June 9, 1927.
296,514. Phenolic resins. Manufacture of. British Dyestuffs Corporation, Ltd., N. Stafford, and E. E. Walker. July 7, 1927.
296,536. Hydrocarbons, Manufacture of. C. Arnold. (*Standard Development Co.*) August 8, 1927.
296,557. Separating impurities or constituents from impure lead or lead alloys. H. Harris. September 3, 1927.
296,558. Nickel and/or cobalt carbonyl, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) September 5, 1927.
296,584. Fusible lead alloys. E. C. R. Marks. (*American Machine and Foundry Co.*) October 20, 1927.
296,616. Dyestuffs containing chromium, Manufacture and production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) January 11, 1928.
296,361. Condensation products of urea or its derivatives and formaldehyde, Manufacture of. *I.G. Farbenindustrie Akt.-Ges.* February 28, 1927. Addition to 266,752.

Applications for Patents

Broadbent, J. G., and Hardy, C. T. Carbon dioxide plant. 26,503. September 15.
Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Administering narcotics. 26,324. September 13.
Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of vegetable effect-threads. 26,521. September 15.
Holzverkohlungs-Industrie Akt.-Ges. and Seib, J. Production of crotonic aldehyde. 26,287. September 13.
I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphur-containing hydroxyquinones. 25,613. September 6. (Germany, September 7, 1927.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of oil lacquers, etc. 25,743. 25,744. September 7. (Germany, September 10, 1927.)
I.G. Farbenindustrie Akt.-Ges. Production of lubricating etc. oils. 25,845. September 8. (Germany, September 28, 1927.)
I.G. Farbenindustrie Akt.-Ges. and Johnson J.Y. Impregnation of fibrous materials. 25,935. September 10.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J.Y. Hydrolysis of peat, etc. 25,936. September 10.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J.Y. Production of articles of metallic oxides. 25,937. September 10.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of artificial cork masses. 25,938. September 10.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Apparatus for separation of oil. 26,087. September 11.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Apparatus for measurement of pulverised coal, etc. 26,088. September 11.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of optically-active phenylpropanol-methylamine. 26,095. September 11. (Germany, September 20, 1927.)
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of artificial threads. 26,097. September 11. (Germany, September 15, 1927.)
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of artificial masses. 26,394. September 14.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of fertilisers. 26,395. September 14.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of granular masses from melts, etc. 26,396. September 14.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of olefines, etc. 26,397. September 14.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of gases. 26,398. September 14.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of calcium cyanide. 26,522. September 15.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of articles from alloys. 26,523. September 15.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Process for operating with ammonia. 26,524. September 15.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of active carbon. 26,525. September 15.
I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphonated derivatives of unsaturated fatty acids. 25,986. September 10. (Germany, September 10, 1927.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of oil lacquers, etc. 25,987. September 10. (Germany, September 12, 1927.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of ortho-halogen-anthraquinone carboxylic acids. 25,994. September 10. (Germany, September 9, 1927.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of amino-alkylamino derivatives of aromatic amino-oxy and diamino compounds. 26,214. September 12. (June 23, 1927.)
I.G. Farbenindustrie Akt.-Ges. Preventing deposition of driers in varnishes. 26,310. September 13. (Germany, October 24, 1927.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphur dyestuffs. 26,461. September 14. (Germany, September 15, 1927.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of piece-dyed woollen fabrics. 26,462. September 14. (Germany, September 16, 1927.)
Imperial Chemical Industries, Ltd., and Shepherdson, A. Preparation of colloidally-dispersed materials. 26,199. September 12.
Imperial Chemical Industries, Ltd. Dyeing artificial silk. 26,200. September 12.
McGuinness, M. Treatment of carbon compounds. 26,311. September 13.
Mortimer, J. E. Converting carbon dioxide, etc., into solid. 26,358. September 14.
Poetzsch, W. G. Chromium-plating apparatus. 26,297. September 13. (Germany, October 6, 1927.)
Poetzsch, W. G. Recovery of vapours from chromium baths. 26,298. September 13. (Germany, October 6, 1927.)
Soc. of Chemical Industry in Basle. Manufacture of vat dyestuffs. 25,995. September 10. (Switzerland, September 9, 1927.)
Soc. of Chemical Industry in Basle. Manufacture of dyestuffs. 25,996. September 10. (Switzerland, September 10, 1927.)
Turek, O. Method of producing 2, 4, 6-trinitro-1, 3, 5-triazidobenzine. 26,425. September 14. (Germany, October 18, 1927.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall., pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex wharf, London, in cwt. kegs,

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6¼d. to 6¾d. per lb. Crude 60's, 2s. 1d. to 2s. 1½d. per gall. prompt.

ACID CRESYLIC 99/100.—2s. 7d. to 3s. per gall. 97/99.—2s. 6d. to 2s. 7d. per gall. Pale, 95%, 2s. 4d. to 2s. 5d. per gall. Dark, 2s. 1d. to 2s. 1½d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.

BENZOLE.—Prices at works: Crude, 10½d. to 11d. per gall.; Standard Motor, 1s. 4½d. to 1s. 5d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 6d. to 1s. 11d. per gall. Firm. Pure, 1s. 10d. to 2s. 1d. per gall.

XYLOL.—1s. 3d. to 1s. 11d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.

CREOSOTE.—Cresylic, 20/24%, 9d. per gall.; middle oil, 6⅞d. to 7⅜d. per gall. Heavy, 7⅛d. to 8⅜d. per gall. Standard specification, 6⅛d. to 6⅜d. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent 90/160, 1s. 1½d. to 1s. 2½d. per gall. Solvent 95/160, 1s. 2d. to 1s. 7d. per gall. Solvent 90/190, 11d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £8 per ton. Hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £13 to £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 45s. to 50s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 5s. to 6s. per gall. 90/180, 3s. to 4s. per gall. Heavy, 2s. 6d. to 3s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100 %.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 10d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£2 16s. 10d. to £3 10s. per ton, according to quality.

CADMIUM SULPHIDE.—3s. 9d. to 4s. 6d. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £55 per ton, according to quantity. drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 7d. to 7s. per lb.

ZINC SULPHUR.—11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. 4d. to 2s. 5d. per lb.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 4d. to 1s. 6d. per lb. Technical.—10½d. to 11½d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. per lb.

BISMUTH CITRATE.—9s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 9d. per lb.

BISMUTH SUBNITRATE.—8s. 3d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.

BISMUTH OXIDE.—12s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts., 11d. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 2s. 1d. per lb.; potassium, 1s. 10d. per lb.; sodium, 2s. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—B.P., 1s. 2d. to 1s. 3d. per lb.

CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. ·730—11d. to 1s. 0d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—1s. 11d. to 2s. 2d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 3s. 1d. to 3s. 4d. per lb.; U.S.P., 2s. 9d. to 3s. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 20s. per lb. net for January delivery; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 7s. 10d. to 7s. 11d. per lb., levig., 7s. 4d. to 7s. 5d. per lb.; Corrosive Sublimate, Lump, 6s. 1d. to 6s. 2d. per lb., Powder, 5s. 6d. to 5s. 7d. per lb.; White Precipitate, Lump, 6s. 3d. to 6s. 4d. per lb., Powder, 6s. 4d. to 6s. 5d. per lb., Extra Fine, 6s. 5d. to 6s. 6d. per lb.; Calomel, 6s. 8d. to 6s. 9d. per lb.; Yellow Oxide, 7s. 2d. to 7s. 3d. per lb.; Persulph., B.P.C., 6s. 5d. to 6s. 6d. per lb.; Sulph. nig., 6s. 2d. to 6s. 3d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 3d. to 1s. 6d. per lb.

METHYL SULPHONAL.—8s. 9d. to 9s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—2s. 5d. to 2s. 8d. per lb.

PHENAZONE.—3s. 9d. to 4s. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—95s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 6d. to 2s. 9d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9 per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—47s. per lb.; in quantity lower.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911—2s. 3d. to 2s. 6d. per lb., B.P.C. 1923—2s. 5d. to 2s. 8d. per lb. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 4s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 6½d. to 1s. 9d. per lb. Crystal, 1s. 7d. to 1s. 10d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 6d. to 6s. 9d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 1d. per lb.

THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 13s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—10s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL—2s. per lb

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.

COUMARIN.—9s. 6d. per lb.

CITRONELLOL.—13s. 6d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—10s. 6d. per lb.

GERANIOL (PALMAROSA).—23s. per lb.

GERANIOL.—6s. 6d. to 11s. per lb.

HELIOTROPINE.—4s. 6d. per lb.

ISO EUGENOL.—14s. 6d. per lb.

LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose, 18s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—3s. 6d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—40s. per lb.

SAFROL.—1s. 4d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—26s. per lb.

BOURBON GERANIUM OIL.—21s. per lb.

CAMPHOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—12s. per lb.

CINNAMON OIL LEAF.—6s. 9d. per oz.

CASSIA OIL, 80/85%.—7s. per lb.

CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 2d. per lb.

CLOVE OIL (PURE 90/92%).—7s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—2s. per lb.

LAVENDER OIL.—Mont Blanc, 48/50%, Esters, 16s. 3d. per lb.

LEMON OIL.—16s. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—22s. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—13s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 15s. per lb.; Japanese, 8s. 6d. per lb.

PETITGRAIN.—8s. 9d. per lb. Sandalwood, Mysore, 26s. 6d. per lb., 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, September 20, 1928.

BUSINESS has been fairly active this week, and signs of further improvement continue. Prices are generally unchanged. Export business has been quite good.

General Chemicals

ACETONE is in short supply at £74 10s. to £77 10s. per ton, and the position is very firm.

ACETIC ACID.—Unchanged

ACID FORMIC.—In good demand at £47 10s. per ton for 85%.

ACID LACTIC.—Unchanged.

ACID OXALIC.—The demand continues and price is unchanged at £31 to £33 per ton.

ACID TARTARIC is firmer at 1s. 4d. to 1s. 4¼d. per lb.

AMMONIUM CHLORIDE.—Unchanged.

SULPHATE OF ALUMINA.—The short supply continues. Price unchanged at £6 15s. per ton for 17 18% iron free.

CHLORIDE OF BARIUM is still very short and the price quoted is £10 to £10 5s. per ton, ex store.

COPPER SULPHATE.—Unchanged.

CREAM OF TARTAR is in fair demand at £99 to £100 per ton, less 2½%, for 99/100%, B.P.

FORMALDEHYDE is a little easier at £39 to £39 10s. per ton for 40%. The demand remains good.

LEAD ACETATE is a little easier at £42 10s. per ton for white and £41 per ton for brown.

LEAD NITRATE is firm at £36 to £36 10s. per ton.

LIME ACETATE.—Unchanged.

METHYL ACETONE is firm at £59 per ton for 45%.

POTASSIUM CARBONATE.—Unchanged at £25 to £27 per ton for 96 98%.

CHLORATE OF POTASH.—Firm at £28 to £28 15s. per ton. Supplies still short.

PERMANGANATE OF POTASH is still very firm at 5¼d. to 5½d. per lb.

POTASSIUM PRUSSIATE is firm at £63 10s. to £65 10s. per ton.

SODIUM ACETATE is still in short supply, and very firm at £21 10s. to £22 per ton.

SODIUM PRUSSIATE.—Unchanged at 4½d. to 5d. per lb. Position very firm.

SODIUM PHOSPHATE.—Unchanged.

TARTAR EMETIC.—10¾d. per lb. and in good demand.

ZINC SULPHATE.—Unchanged at £11 10s. per ton to £11 15s. per ton.

Coal Tar Products

The market in general remains very quiet, and there is little change to report in prices from last week.

MOTOR BENZOL is firm at 1s. 5d. per gallon, on rails.

SOLVENT NAPHTHA is firm at 1s. 1½d. per gallon, f.o.r. makers' works.

HEAVY NAPHTHA is also firm at 1s. 1d. to 1s. 1½d. per gallon, on rails.

CREOSOTE OIL remains weak, the price in the north being about 6d. per gallon, f.o.r., and 6½d. per gallon in London.

CRESYLIC ACID is unchanged, the 98/100% quality being quoted at 2s. 2d. per gallon, f.o.b., while the dark quality, 95/97%, is quoted at about 1s. 10d. per gallon, f.o.b. naked.

NAPHTHALENES are steady at £5 per ton for the 74/76 quality, and at £6 to £6 10s. per ton for the 76/78 quality.

PITCH remains steady, to-day's value is about 50s. per ton, f.o.b U.K. ports.

Latest Oil Prices

LONDON, September 19.—LINSEED OIL steady for near. Spot, ex mill, £29 5s.; September to December, £28; January-April, £28 5s.; May-August, £28 12s. 6d., naked. RAPE OIL nominal. Crude extracted, £40; technical refined, £42, naked, ex wharf. COTTON OIL slow. Egyptian crude, £31 10s.; refined common edible, £37; and deodorised, £39, naked. TURPENTINE firm but inactive. American, spot, 42s. 3d.; October-December, 43s.; January - April, 44s. 9d. per cwt.

HULL, September 19.—LINSEED OIL.—Spot and September, £28 2s. 6d.; October-December to January-April, £28 10s.; May-August, £28 15s. COTTON OIL.—Bombay crude, £29 10s.; Egyptian crude, £30 5s.; edible refined, £33 10s.; technical, £33 5s.; deodorised, £35 10s. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £37 5s. GROUNDNUT OIL.—Crushed/extracted, £37 15s.; deodorised, £41 15s. SOYA OIL.—Extracted and crushed, £32 10s.; deodorised, £36. RAPE OIL.—Crude/extracted, £40 15s.; refined, £42 15s. per ton. TURPENTINE.—Spot, 45s. per cwt., net cash terms, ex mill.

Nitrogen Products

Sulphate of Ammonia.—The demand for this product continues satisfactory and the market remains firm at £9 5s. 6d./£9 7s. 9d. per ton, f.o.b. U.K. port, for prompt shipment. Higher prices are being quoted for forward. Nothing of interest has happened in the home market. It is understood that fewer merchants have covered their spring requirements than last year.

Nitrate of Soda.—Large sales of this product have been reported at the prices announced by the new Central Sales Organisation. It is anticipated that there will be no demarcation from the scale of prices fixed, which for prompt shipment is 10s. 3½d. per metric quintal. In the home market buyers are awaiting with interest details of the terms of sale of this product.

South Wales By-Products

BUSINESS in South Wales by-products continues to be unsatisfactory, and, although there has been a sharpening of demand in some products, the general amount of business transacted is well below normal. Pitch has not quite such a good demand, but values are unchanged at about 47s. 6d. per ton delivered. Crude tar is in slightly better demand, but refined tars are stationary. Gasworks tar continues to change hands at from 7½d. to 7¾d. per gallon, delivered, while coke oven tar is unchanged at from 7¾d. to 8d. per gallon delivered. Crude naphthalene has a very small call round about 80s. per ton, f.o.r., makers' works, while a similar remark applies to whizzed at about 90s. per ton, f.o.r., makers' works. Patent fuel and coke exports continue to show a slight improvement, but prices are unchanged, 20s. to 21s. 6d. ex-ship, prevailing at Cardiff, and 19s. 9d. to 20. 6d., ex-ship, Swansea. Coke, best foundry, 32s. 6d. to 37s. per ton; furnace, from 19s. to 21s. per ton, and other sorts from 25s. to 32s. 6d. per ton. Oil imports over the last four ascertainable weeks totalled 20,074,495 gallons.

Increase in Citrate Prices

MAY AND BAKER, LTD., announce that owing to the greatly increased cost of citric acid, they are obliged to raise the prices of citrates by 3d. per lb. and iron citrate and quinine B.P. by ½d. per oz.

The Canadian Salt Industry in 1927

SALT production in Canada during 1927 amounted to 268,672 tons, valued at $1,614,667, an increase of 2·3 per cent. in quantity and 9·1 per cent. in value as compared with the 1926 shipments of 262,547 tons, worth $1,480,149. The average price for all grades advanced to $6·01 per ton in 1927 as against $5·63 per ton in the previous year. Ontario's production was 254,181 tons, or 94·6 per cent. of the Canadian total; Nova Scotia and Alberta contributed the remainder. The Nova Scotia production was obtained from the Malagash mine in Cumberland county; Alberta's production came from the Fort McMurray district. Imports of salt into Canada were recorded at 176,761 tons, appraised at $1,082,080. Exports of Canadian salt totalled 1,212 tons, worth $22,793. The total capital employed by the 10 operating firms in this industry was $3,194,802. Employment statistics showed an average of 54 salaried employees and 322 wage-earners on the payroll during the year; their earnings totalled $499,967.

Seventh National Cost Conference

THE seventh National Cost Conference of the Institute of Cost and Works Accountants will be held at the Queen's Hotel, Birmingham, on Friday, September 28. At the morning session, commencing at 10.30 a.m., Mr. Alexander Ramsay (chairman of the Birmingham and District Engineering and Allied Trades Employers' Association) will preside, and the subject of "Cost Accounting and the Industrial Future" will be introduced by Mr. J. A. Lacey, F.C.W.A. (Birmingham) and Mr. J. Wardropper, B.Sc., B.Com., A.C.W.A. (York). The subject of "The Standardisation of Cost Accounts" will be introduced by Mr. B. Thistlethwaite, F.C.W.A., A.C.A. (Manchester), at the afternoon session at 2.30 p.m., when Sir Holberry Mensforth will preside. The attendance of directors, managers, executives, cost accountants and other responsible works officials is cordially invited. The annual dinner of the Institute will take place at 7.15 p.m. on the same day at the Queen's Hotel, Birmingham, when the chief guest will be Lord Askwith.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinion.

Glasgow, September 19, 1928.

BUSINESS in the heavy chemical market during the past week has shown more improvement, and the proportion of orders in relation to inquiry going around is better than for some little time. Prices remain on about the same level as last reported, and acetone is still very scarce for prompt delivery.

Industrial Chemicals

ACETONE, B.G.S.—Nominally £70 to £73 per ton, ex store, but practically none available for immediate delivery.

ACID ACETIC, 98/100%.—Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Price maintained at 6¼d. per lb. delivered or f.o.b. U.K. ports in moderate demand.

ACID CITRIC, B.P. CRYSTALS.—Offered at 2s. 3d. per lb., less 5%, ex wharf, to come forward.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC.—80° quality, £24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4d. per lb., less 5%, ex wharf, prompt shipment from the Continent. Spot material available at 1s. 4½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—On offer at £5 10s. per ton, c.i.f. U.K. ports. Spot material quoted £5 15s. per ton, ex store.

ALUM, LUMP POTASH.—Quoted £8 7s. 6d. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Crystal meal quoted £8 10s. per ton, ex store.

AMMONIA, ANHYDROUS.—Quoted 9½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE, 98/100%.—Quoted £40 per ton, ex wharf, prompt shipment from China.

ARSENIC, WHITE POWDERED.—Quoted £18 10s. per ton, ex wharf, prompt despatch from mines. Spot material on offer at £19 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE.—Rather scarce for prompt delivery, and price advanced to about £9 per ton, c.i.f. U.K. ports. Spot material quoted £10 per ton, ex store.

BLEACHING POWDER.—British manufacturers' contract price to consumers £6 12s. 6d. per ton, delivered minimum 4-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price, £4 5s. to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material rather higher at about £24 5s. per ton, c.i.f. U.K. ports. Some spot parcels on offer at about £23 per ton, ex store.

FORMALDEHYDE, 40%.—Quoted £35 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £38 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Spot material available at about £30 10s. per ton, ex store. Offered at £29 per ton, c.i.f. U.K. ports.

LEAD, WHITE.—£35 15s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 15s. per ton, ex store; brown on offer at about £40 per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality, 64 O.P. Quoted 1s. 4d. per gallon, less 2% delivered.

POTASSIUM BICHROMATE.—4¼d. per lb., delivered, minimum 4-ton lots. Under 4-ton lots ¼d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Offered from the Continent at £25 per ton, c.i.f. U.K. ports. Spot material available at £26 per ton, ex store.

POTASSIUM CHLORATE, 99¾/100%, POWDER.—Quoted £23 per ton, c.i.f. U.K. ports. Crystals, 20s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Offered from the Continent at 6½d. per lb., ex wharf, prompt shipment. Spot material quoted 6⅝d. per lb., ex store.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton; and 70/72%, £13 12s. 6d. per ton, minimum 4-ton lots carriage paid on contract. Spot material 10s. per ton extra.

SODIUM ACETATE.—On offer for prompt delivery at about £21 5s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb. delivered buyer's works, minimum 4-ton lots. Under 4 and over 2-ton lots, 1/16d. per lb. extra. Under 2-ton lots, 3⅛d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 3s. 9d. per ton ex quay, minimum 4-ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE.—In moderate demand. Spot material quoted 4¾d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption:—Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

German-Austrian Chemical Understanding

NEGOTIATIONS were carried out between German and Austrian chemical interests in 1927 and the early part of this year with a view to the equalisation of prices and a division of markets. The leading negotiators were the I.G. for Germany and the Skoda-Wetzler company for Austria. The Austrian sphere of interest was arranged as follows: Austria, Hungary, South Slav countries, Roumania, Bulgaria, and Turkey, while Germany retained the complete interest in Czechoslovakia, Poland, and Western Europe. This agreement involves, among other things, alum, ammonia, "antichlor," chrome alum, sulphur chloride, glaubers salt, potassium nitrate, sodium, sulphuric acid, hyposulphites, and sodium sulphide. Synthetic fertilisers and certain mineral salts are expressly excluded. A recent article in the *Chemiker Zeitung* suggests that companies outside the agreement (not German and Austrian ones alone) should have a better chance of trading in the South Slav countries as a result of the agreement, in view of the fact that the competition of the I.G. has ceased.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, September 20, 1928.

The demand for chemicals this week on the Manchester market seems to have been quieter, and a number of sellers report only a moderate business in most lines. Inquiry, however, has been fairly plentiful, although still, for the most part, relating to parcels which are below the usual weight. Generally speaking, current reports point to a slight though steady improvement in the industrial situation, and the chemical trade is expecting to benefit as a result.

Heavy Chemicals

A quiet business has been done this week in chlorate of soda, but there has been little further change in the price position, offers being in the neighbourhood of 2¾d. per lb. Prussiate of soda continues steady at from 4¾d. to 5¼d. per lb., according to quantity, and a moderate inquiry for this material has been met with. Phosphate of soda is moving off in relatively limited quantities, with values at round £12 5s. per ton. A not unsatisfactory call is being experienced for caustic soda on contract account, and quotations are firm at from £13 7s. 6d. to £15 7s. 6d. per ton, according to quality. Somewhat easier prices are being mentioned here and there in connection with hyposulphite of soda, with the photographic grade on offer at from £15 to £15 10s. per ton, and the commercial material at about £9 5s. Offers of saltcake continue on a contract basis of £2 12s. 6d. per ton, and a quiet business is being put through. In the case of sulphide of sodium, inquiry during the past week has been rather inactive, but values show relatively little change compared with last report, commercial quality being quoted at from £7 10s. to £8 per ton, and the concentrated product at round £9 10s. A moderate trade is reported in bleaching powder at from about £6 15s. per ton. With regard to bichromate of soda, this keeps fairly firm at from 3d. per lb., according to quantity, and a quietly steady demand has been reported. Alkali, also, is moving off in fair quantities, and prices are maintained at £6 2s. 6d. per ton. Buying interest in bicarbonate of soda is pretty good, and quotations remain at round £10 10s. per ton.

Chlorate of potash has met with some inquiry this week and values at about 2⅞d. per lb. show no further ease. Yellow prussiate of potash is selling in moderate quantities, and offers are held at from 6¾d. to 7¼d. per lb., according to quantity. Bichromate of potash keeps steady, and continues to meet with a fairly active demand at round 4d. per lb. With regard to caustic potash, inquiry for this material keeps up at about its recent level, with current offers on the basis of £33 5s. per ton, for prompt delivery of one to five-ton lots. There has been no change in the position of carbonate of potash, a quiet business being put through at from £25 to £25 10s. per ton. Permanganate of potash is maintained at about 5d. per lb. for commercial material and 5¼d. for B.P.

Inquiry for arsenic is on slow lines, and offers this week have been no better than about £16 10s. per ton, on rails, for white powdered, Cornish makes, with foreign supplies available at about the same figure. A moderate business is being done in the case of sulphate of copper, and prices seem now to be fairly steady at up to £25 5s. per ton, f.o.b. For the lead compounds, inquiry is slow just now, but quotations are up to the level of the past few weeks, nitrate offering at £36 per ton or thereabouts, and acetate at £40 10s. for white, and about £39 for brown. Although there is no special feature about the current demand for acetate of lime, prompt supplies are not excessive and values are firm in consequence, with grey at £16 10s. per ton, and brown at £8 15s. to £9.

Acids and Tar Products

Tartaric acid is in moderate request, and offers are on a steady basis at 1s. 4¼d. to 1s. 4½d. per lb. A further substantial rise in citric acid has occurred during the past few days, 2s. 4d. per lb. being about the minimum price at which supplies can now be obtained. Oxalic acid is in quietly steady demand at from 3⅜d. to 3½d. per lb. Acetic acid is well held at round £36 10s. per ton for 80 per cent. commercial, and £66 to £67 for glacial quality.

A shade more business is passing in pitch, but quotations are no better than before, offers being at about £2 5s. per ton, f.o.b. Inquiry for creosote oil is still comparatively slow, but prices seem to be fairly steady at the moment at up to 6¼d. per gallon. Solvent naphtha is in moderate request at round 1s. 1d. per gallon.

Institute of Fuel

Programme for Winter Session

The members of the Institute of Fuel will open the winter session with a meeting on Wednesday, October 10, at 6 p.m., at the Chemical Society's Rooms, Burlington House, London, when Mr. T. A. Peebles, vice-president of the Hagen Corporation, Pittsburgh, will read a paper on "Automatic Combustion Control of Liquid, Solid and Gaseous Fuels." The annual two days' conference of the Institute will be held at the Institution of Electrical Engineers, Victoria Embankment, London, on Wednesday and Thursday, November 21 and 22, commencing each day at 10 a.m. On November 21, the morning will be devoted to Lord Melchett's presidential address, followed by a paper on "Fuel Conservation in Locomotive Practice," by Sir Henry Fowler, of the L.M.S. Railway, while in the afternoon there will be papers on "The Economics of Coal Production and Distribution." The annual dinner will be held in the evening. On November 22 there will be a whole-day symposium on "Fuel Control in Industry." On Monday, December 10, at 5.30 p.m., there will be a joint meeting with the Institute of Transport, held at the Institution of Electrical Engineers, when papers on "Fuels—Alternative or Supplementary to Petrol—for Use in Internal Combustion Engines for Road Vehicles," will be read. Evening meetings will be held in London in the New Year on Wednesday, January 9; Wednesday, February 13; Wednesday, March 13; and Wednesday, April 10. There will also be a provincial meeting early in 1929. The annual dinner will be held on Wednesday, November 21, 1928.

Owing to the steady growth of the Institute and the desirability of providing additional amenities for the benefit of members, the council have taken more commodious premises on the second floor of 53, Victoria Street, London, S.W. The postal address and telephone number will remain unchanged. The offices will be occupied by the Institute on September 24, and will include, in addition to a general office and library, a reception and reading room available for use of members during office hours.

Nitrate Distilleries of Malaya: Statutory Meeting

Some indications as to the progress made in the production of power alcohol were given on Wednesday, September 12, at the statutory meeting of Nipah Distilleries of Malaya, Ltd., in London. Mr. Henry Waugh, who presided, said that the company was fortunate in being able to purchase a complete plant on favourable terms. The plant was guaranteed by its makers to produce 2,000 gallons of alcohol per day, and was on the way to Malaya. Mr. H. C. Stafford had been appointed distillery manager. Dr. W. R. Ormandy, consulting chemist to the Distillers Co., Ltd., said the Distillers Co. had been endeavouring for many years to work out processes for the industrial application of absolute alcohol, and had particularly busied themselves with the problem of its application to power—to motor-fuel purposes. During the last year there had been much talk about "anti-knocking" fuel. Alcohol was just twice as efficient as benzol in stopping knocking. Many experiments had been carried out on various methods of drying alcohol. The Distillers Co. had put down the first unit for a French process at their Liverpool factory, and had found that at a small cost they could remove the 7 per cent. by weight of water from alcohol, and could get over 99 per cent. alcohol which mixed with petrol in any proportion. A large unit capable of handling 150 hectolitres a day on the same principle had been sent to Australia. Petrol containing 15 to 20 per cent. anhydrous alcohol prevented, to a very large extent, the deposit of carbon in the cylinders, and prevented damage to the lubricating oil.

Copper Sulphate Shortage at Bordeaux

Copper sulphate stocks in Bordeaux were reported by the Harbour Administration, at the end of August, to be only 46 tons. In view of the fact that Bordeaux is in a great viticultural area, this quantity is small, and it is assumed that the demand in the early part of next year will be very large.

Company News

BURT, BOULTON AND HAYWOOD.—A final dividend of 5 per cent. is announced, making 10 per cent for the year.

BRITISH ALUMINIUM CO.—An interim dividend has been declared at the rate of 4 per cent. (actual), less income tax, on the ordinary shares, payable on October 1.

SOUTHALL BROS. AND BARCLAY.—An interim dividend of 5 per cent. per annum, free of income tax, on the ordinary shares for the half year, is payable on October 1.

DOMINION TAR AND CHEMICAL CO.—For the half year an interim dividend of 11 per cent. per annum less income tax, is payable on September 21 on the ordinary shares.

IDRIS HYDRAULIC TIN.—An interim dividend of 10 per cent., less income tax at 4s. in the £, has been declared in respect of the profits for the year ending December 31, 1928, payable on October 27.

PARKES' CHEMISTS.—The payment on September 20 is announced of an interim dividend on the preference shares for the half-year ending August 31, 1928, at the rate of 6 per cent. per annum, less income tax.

UNITED MOLASSES CO.—The directors have resolved that an interim dividend of 8 per cent. actual (less tax) shall be paid on the increased issued ordinary capital of 1,496,590 shares. This dividend will be paid on October 15.

STAVELEY COAL AND IRON CO.—The net profits for the year ended June 30, after allowing for depreciation and taxation amounted to £204,723. A final dividend of 2½ per cent. is recommended, making 5 per cent. for the year, free of tax. The sum of £114,313 is carried forward.

SEAGER EVANS AND CO.—The year's trading to March 31 last show a loss of £8,017, to which is added depreciation of plant, £972, and depreciation of leaseholds, £209. The profit and loss account, therefore, shows a debit balance of £12,869, including a debit balance brought forward of £3,661, which the directors recommend should be carried forward.

GREAVES, BULL AND LAKIN (HARBURY WORKS), LTD.—The maiden report states that the accounts, covering a period of 15 months trading to June 30 last, show a gross profit, after paying all trading expenses, maintenance, and repairs, of £90,175, and a net profit, after providing £14,086 for debenture interest, of £61,447. The directors recommend the payment of a dividend of 12½ per cent., less tax, on the £275,000 of ordinary share capital, allocating £20,000 to a reserve for depreciation of properties and plant and carrying £7,072 forward.

DUNSTABLE PORTLAND CEMENT CO.—The report for the year ended March 31 last states that the profit and loss account shows a total credit balance of £176,706, and brought forward from last year was £7,007, making £183,713. Directors' fees, legal and professional charges, bank interest, income-tax, and sundry other charges take £18,949, to depreciation reserve is placed £14,813, interest, stamp duty, etc., on shares in subsidiary companies has been written off by £14,339, and to general reserve is placed £73,800, leaving £61,811. Out of this there have been paid one year's dividend on 7½ per cent. preference shares, less tax, £27,329, and an interim dividend of 5 per cent. on ordinary shares, less tax, £21,000, leaving £13,482.

Nitrate Trading Company's Policy

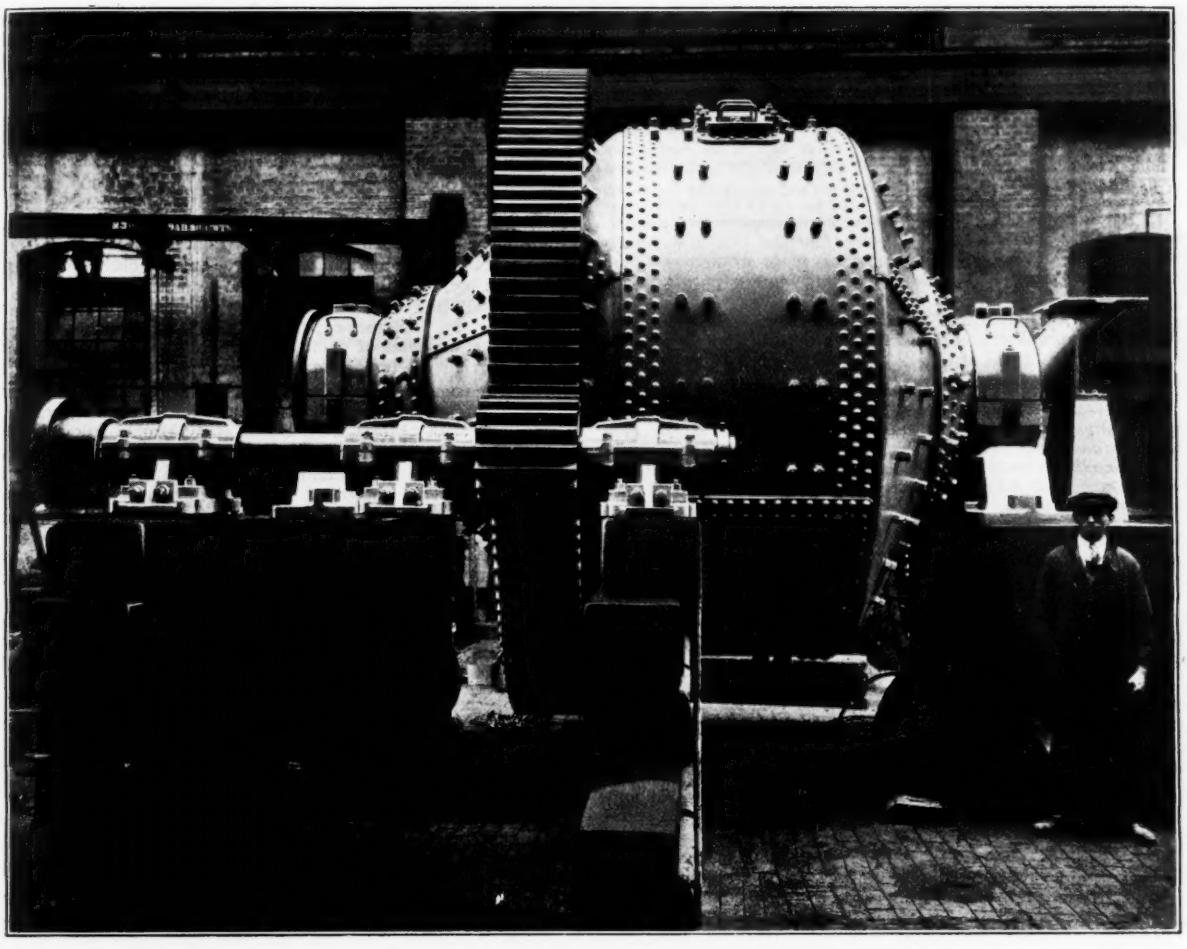
IN July the directors of the British and South Pacific Trading Co. announced a change of policy which involved the investment of fresh capital in the production end of the nitrate industry instead of restricting the company's interests to trading and distribution. At that time the balance of the authorised capital, £100,000, was issued. A further extension of the new policy has now taken place. In the belief that as a result of the latest developments the industry will be placed on a sounder basis, the directors have acquired for the company a further interest in nitrate-producing companies. As the whole of the existing authorised capital has now been issued, it is proposed to take powers to increase the capital from £300,000 to £1,000,000, so that in the event of suitable opportunities occurring further capital may be issued. This company is interested in the Chilean Nitrate of Soda Distributors, Ltd., the newly formed distributing company, which is one of the largest official consignees under the central selling scheme.

Applications for Exemption from K.I.D.

REPRESENTATIONS have been made to the Board of Trade under Section 10 (5) of the Finance Act, 1926, regarding the exemption from duty under the Safeguarding of Industries Act of barium nitrate and chinosol. The question of the renewal of the Safeguarding of Industries (Exemption) No. 5 Order, 1927, and Nos. 1, 2, 3 and 4 Orders, 1928, is now under consideration by the Board of Trade. The articles covered by these orders are as follows:—R. Acetone; acetone (fermentation), acetone synthetic, acid hydrocyanic anhydrous; acid lactic which satisfies the requirements of the British Pharmacopœia; acid oxalic; amidopyrin (pyramidon; dimethyl-amidoantipyrine); ammonium perchlorate; barbitone (Veronal; malonal; malourea; acid diethyl barbituric; diethylmalonylurea; Hypnogen, Deba); bromural (Dormigene); cocaine, crude; Dial (acid diallyl barbituric); Didial (ethyl morphine diallyl barbiturate); Elbon (cinnamoyl para oxyphenyl urea); ethylene bromide; ethylene glycol (glycol; alcohol ethylene); eukodal; furfurol; glycol ethers; guaiacol carbonate (Duotal); hydroquinone; integrators (planimeter type); R. Lead acetate; lead tetra-ethyl; lipoidin; lithium carbonate; lithium hydroxide; metaldehyde; methyl chloride; methyl sulphonal (Diethylsulphonemethylethyl-methane, Trional); nickel hydroxide; papaverine; phenacetin (acetparaphenetidine); phenazone (antipyrine; phenyl-dimethylpyrazolone; Analgesin; Anodynine; dimethyl oxychinizin); phytin; piperazine (diethylene-diamine; Dispermin); planimeters; R. potassium chlorate; potassium guaiacol sulphonate (Thiocol); R. potassium hydroxide (R. potassium caustic; R. Potassium hydrate); R. potassium permanganate; pyramidon-veronal; quinine ethyl-carbonate; radium compounds; resorcine (resorcinol); salol (phenyl salicylate); styracol (Guaiacol cinnamate); sulphonal; Synthalin; urea (carbamide); and vanadium-silica compounds specially prepared for use as catalysts for sulphuric acid manufacture. Any communications with respect to the above mentioned matters should be addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George Street, London, S.W.1, within one month from the date of this notice. (September 19, 1928.)

The Duffield Process of Coal Treatment

IN accordance with the regulations of the committee of the London Stock Exchange a statement has been issued, for information only, by Duffield Coal Products, Ltd., which has been formed to acquire and develop commercially the Duffield processes for the extraction of gas and oil waste from coal and to acquire the "Mastra Coal" process for the production of fuel. Mr. Duffield's processes, it is stated, cover a method by which he claims that in the treatment of inferior types of coal for the production of coal gas used for industrial purposes, crude oil (from which motor spirit is refined) is released without the necessity of burning coal or gas to provide the heat necessary for its extraction. It is claimed that Mr. Duffield's process for the production of industrial gas from coal with the incidental release of crude oil, if developed commercially, should cause the British coalfields to become one of the cheapest sources of securing the oil from coal. It is claimed that the process is a continuous one. The company will acquire from Lindley Duffield and Co., Ltd.: (1) the benefit of two patent applications together with the benefit of all Letters Patent which may be granted in respect of the applications; (2) all such rights (except in Spain and Italy) as the vendor may possess to obtain foreign patents in respect of the inventions contained in the two patent applications; (3) the benefit throughout the world, excluding Italy and Spain, of all improvements and future inventions made by Mr. Duffield or by Lindley Duffield and Co., Ltd., relating to gas production or oil extraction; (4) the benefit of all extensions and prolongations of the terms for which any such patents may be granted; (5) an exclusive Licence to use an invention, covered by a patent, for improvements in or relating to pulverisers, the Licence being limited to the application of the patent in connection with gas production and oil extraction. In addition to this the company acquires from John Stanley Harrison the benefit of a number of patents relating to the "Mastra Coal" process, for the production of "artificial fuel." The directors of Duffield Coal Products, Ltd., include among others, Sir Philip Dawson, Mr. F. L. Duffield, and Mr. P. Lindsay (a director of the Morgan Crucible Co.)



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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*

GLEN TOR TOILET SPECIALISTS, 8, East Parade, Bradford, manufacturers. (C.C., 22/9/28.) £21 15s. 6d. August 14.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

CAVENDISH'S, LTD., London, E.C., manufacturing chemists. (M., 22/9/28.) Registered September 5, £250 mort., to S. A. Newton, 12, Queen Street, E.C., solicitor; charged on 3, London Wall Avenue, E.C. *Nil. May 15, 1927.

CRAVEN BROS. (BRADFORD), LTD., bleachers, etc. (M., 22/9/28.) Registered September 5, £700 debenture, to Bradford Manufacturing Co., Ltd., 29, Canal Road, Bradford; general charge. *£260. October 14, 1927.

METROPOLITAN DYERS AND CLEANERS, LTD., London, W.C. (M., 22/9/28.) Registered August 30, debenture to bank; charged on The Baulk, Merton Road, Wandsworth; also general charge.

OVO, LTD., Barton-on-Humber, manufacturing chemists. (M., 22/9/28.) Registered September 3, £100 debenture, to J. C. Burbidge, c/o Owen Roberts and Co., Lahore (India), company director; general charge. *—. September 7, 1927.

RENTOKIL (SALES), LTD., London, E.C., disinfectant manufacturers. (M., 22/9/28.) Registered September 6, £200 debenture, to Mrs. E. M. Lanstein, 9, Lancaster Road, Bowes Park; general charge.

Satisfaction

HEPPELLS, LTD., London, S.W., chemists. (M.S., 22/9/28.) Satisfactions registered August 29, £85,000, etc., registered December 23, 1924, June 9, 1926, August 6, 1926, August 24, 1926, December 10, 1926, February 28, 1927 and March 30, 1927.

London Gazette, &c.

Company Winding Up Voluntarily

MOSSLEY OIL CO., LTD. (C.W.U.V., 22/9/28.) By reason of its liabilities, August 28. J. Sykes, 30, Belgrave Place, Stalybridge, Chartered Accountant, appointed as liquidator.

New Companies Registered

THE ALEXANDER CROSS SEED CO., LTD., 21, Hope Street, Glasgow. Registered in Edinburgh on September 10 as a private company with a nominal capital of £75,000 in £1 shares. Seed and produce merchants, chemical manufacturers, exporters and importers of and dealers in all kinds of fertilisers and feeding stuffs, etc.

BRITISH UNITED SALT, LTD. Registered as a "private" company on September 15. Nom. capital, £100 in £1 shares. Manufacturers, importers and exporters of and wholesale and retail dealers in salt, salt-brine, alkalis, chlorine, bleaching powder and other chemicals, etc. A subscriber: W. S. S. Boxwell, "Rosslyn," Wolsey Road, East Molesey, Surrey.

CIELIM ESSENCES, LTD. Registered September 13. Nom. capital, £1,000 in £1 shares. To acquire the branch or part of the business carried on by Confectionery Ingredients and Essences, Ltd., that relates to the manufacture and producing, buying, selling, importing and exporting and otherwise dealing in essences of all kinds, to acquire the registered trade mark "Cielim" and to carry on the business of essence manufacturers, mineral water manufacturers, chemical manufacturers, etc. A subscriber: J. B. Morrell, Burton Croft, York.

DANGER-FREE PRODUCTS AND SERVICES, LTD. Registered September 13. Nom. capital, £100 in £1 shares. To acquire inventions, rights and processes relating to the manufacture of non-inflammable films and other non-inflammable products and of the chemicals, processes or ingredients of which the same are made, etc. Director: A. Davies, 57, Oakhill Road, Putney, London, S.W.15.

DUNN BROTHERS' SUCCESSORS, LTD. Registered September 13. Nom. capital, £15,000 in £1 shares. To acquire the business of chemical and mineral merchants and agents carried on by the exors. of the late A. L. Dunn at Northern Assurance Buildings, Albert Square, Manchester, as "Dunn Brothers and Co.," and to adopt an agreement between Mrs. D. G. Dunn, H. Dunn, C. F. Brockbank and the Public Trustee (exors.) of the one part and H. Unwin A. Waterhouse, A. J. B. Shickle, W. Owen and T. Mitchinson (on behalf of this company) of the other part. Directors: H. Unwin, A. J. B. Shickle, W. Owen, A. Waterhouse, and T. Mitchinson.

DYANESE, LTD., Sep Avenue, Bloomfield Road, Blackpool. Registered September 15. Nom. capital, £5,000 in £1 shares. To acquire the business of a domestic dye manufacturer now carried on by S. M. Tootal at Blackpool, and in particular the trade mark "Dyanese," and to carry on the business of domestic dye manufacturers and manufacturers of all kinds of bleaching and dyeing materials, etc. Directors: R. M. Stothert, H. Lonsdale, S. M. Tootal, and J. E. Ellis.

EXENE CHEMICALS, LTD. Registered September 13. Nom. capital, £2,000 in £1 shares. Manufacturing chemists, dealers in chemicals, chemical products, minerals, mineral products, oils, essences, etc. Directors; A. E. Saunders, 7, Kingsfield Road, Bushey.

Wire Cloth and Perforated Metal

A BEAUTIFULLY-PRODUCED and well-illustrated catalogue (pp. 95) has been issued by Thomas Locker and Co., Ltd., of Ellesmere Works, Warrington, wire cloth manufacturers, metal perforators, and screening engineers. The book opens with a short account of the history of the firm, which was established in 1879. Among the products of the firm, which are known under the name of Durite, are wire; wire screens of various kinds, including perforated metal rotary screens; wire cloth; wire gauze; woven wire conveyor bands; wire fencing and netting; sheet metal etc. The "Durite" screens are made regularly in steel, galvanised iron, brass, copper, phosphor bronze, nickel, Monel metal, Corronil, aluminium, duralumin, nichrome, Staybrite steel, and even in silver, gold, and platinum wire. The company also supplies welded products of any shape and size.

Benn Brothers' Other Journals

THE CABINET MAKER.—Selling Quality; Berlin and Leipzig Fairs; Catesby's 65th Birthday.

THE ELECTRICIAN.—"The High-Speed Circuit Breaker," by W. H. Thompson; Education and Industry: The Metropolitan-Vickers' Summer Meeting. "Marine Electricity—A New Industry," by A. C. Hardy.

THE FRUIT GROWER.—A year's Research and Education; Horticultural Education Association; The Control of Wireworm, by Professor Theobald.

GARDENING ILLUSTRATED.—The Dahlia Show; The Dolomites in June; Making a Lawn; "The Desert Garden," by Sir William Lawrence.

THE GAS WORLD.—The Home Office Report on the Manchester Gasholder Accident; Measurement of Flame Temperatures; Suggestion Schemes, and Promotion of Co-operation of Workpeople.

THE HARDWARE TRADE JOURNAL.—Tubes and Fittings Issue; Malleable Iron Pipe Fittings: A suggested Standard Specification; The Trade Position: A survey of Encouraging Features.

THE TIMBER TRADES JOURNAL.—The Norwegian Market; Flooring and Box Boards; On Measuring Timber Properly; Beetles Injurious to Timber; Sawmill: The Problem of Wood Waste.